

Gov Doc Ont and Hydro-Electric Power
Ont " Commission
H

(Eighth) Annual Report

(12)

HYDRO-ELECTRIC POWER COMMISSION

OF THE

PROVINCE OF ONTARIO

FOR THE YEAR ENDED OCTOBER 31st

1915

PRINTED BY ORDER OF
THE LEGISLATIVE ASSEMBLY OF ONTARIO



TORONTO:

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UNIVERSITY OF TORONTO

To His Honour, COLONEL SIR JOHN HENDRIE, K.C.M.G., C.V.O.,

Lieutenant-Governor of Ontario.

MAY IT PLEASE YOUR HONOUR:

The undersigned has the honour to present to Your Honour the Eighth Annual Report of the Hydro-Electric Power Commission of Ontario for the fiscal year ending October 31st, 1915.

Respectfully submitted,

ADAM BECK,

Chairman.

TORONTO, February 15, 1916.

COLONEL SIR ADAM BECK, K.B.,

Chairman, Hydro-Electric Power Commission,

Toronto, Ont.

SIR,—I have the honour to transmit herewith the Eighth Annual Report of the Hydro-Electric Power Commission of Ontario for the fiscal year ending October 31st, 1915.

I have the honour to be,

Sir,

Your obedient servant,

W. W. POPE,

Secretary.

HYDRO-ELECTRIC POWER COMMISSION OF ONTARIO

COLONEL SIR ADAM BECK, K.B., London, Chairman.

HON. I. B. LUCAS, M.P.P., Markdale, Commissioner.

W. K. McNAUGHT, C.M.G., Toronto, Commissioner.

W. W. POPE, Secretary.

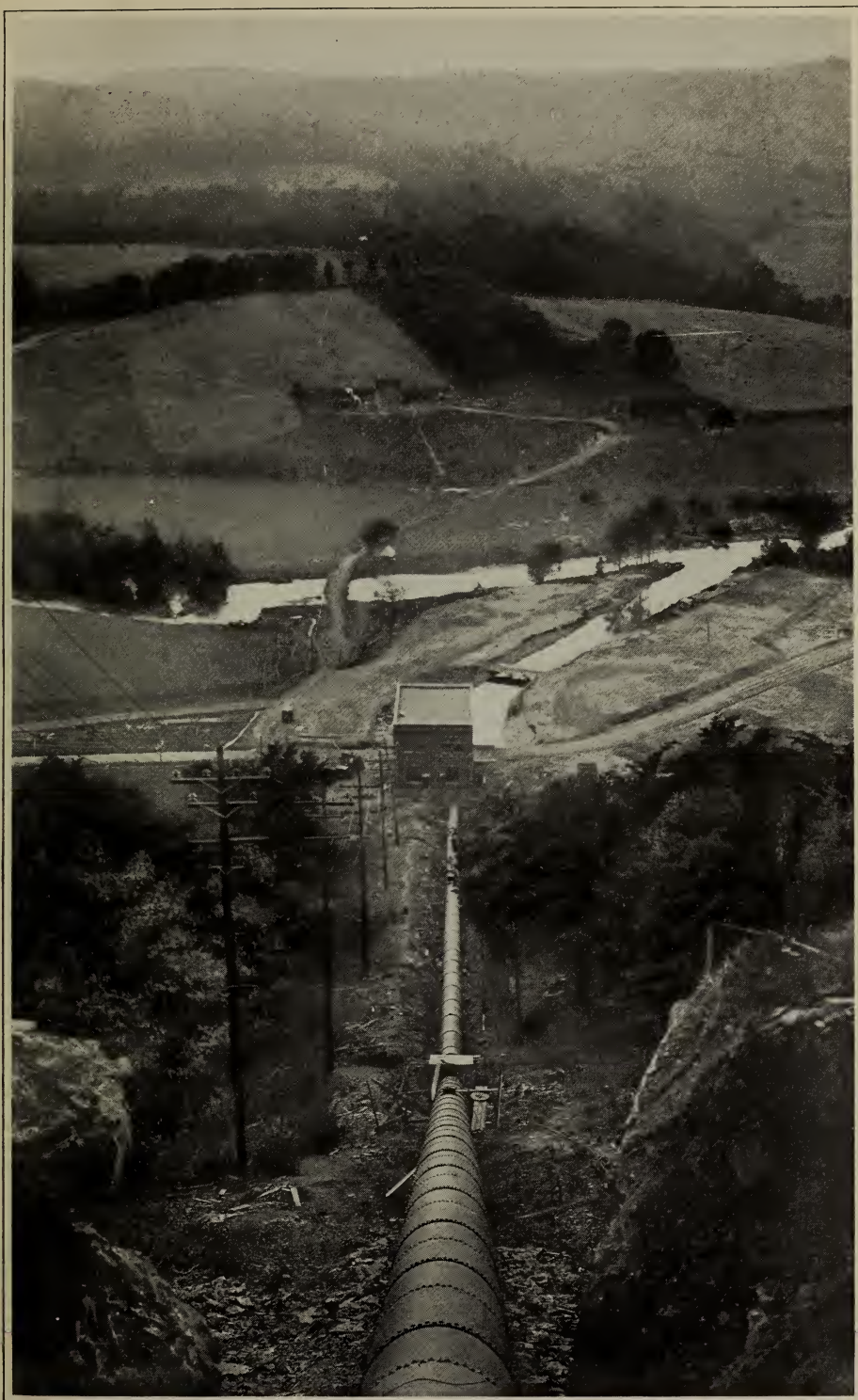
F. A. GABY, Chief Engineer.

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EIGHTH ANNUAL REPORT

OF THE

Hydro-Electric Power Commission

SECTION I

LEGAL PROCEEDINGS

ACTS

The following Act to amend the Hydro-Electric Railway Act of 1914, was passed by the Legislature of the Province of Ontario during the Session of 1915.

This Act was passed to enable part of a Township to bear its proportion of the construction and expense of radial railways, and gives power to purchase existing lines. It also ratifies the contracts entered into by the Hydro-Electric Power Commission with various municipalities for the construction of radial lines and ratifies the by-laws passed by such municipalities.

An Act to amend The Hydro-Electric Railway Act, 1914.

Assented to 8th April, 1915.

HIS MAJESTY, by and with the advice and consent of the Legislative Assembly of the Province of Ontario, enacts as follows:—

1. This Act may be cited as *The Hydro-Electric Railway Act, 1915*. Short title.
2. *The Hydro-Electric Railway Act, 1914*, is amended by adding ^{4 Geo. V. c. 31.} thereto the following section:—

5a. Where an agreement is entered into by the corporation of a township it may provide that the proportion of the cost payable by the corporation shall be borne by the rateable property within a specified district or districts of the township, and in that case,

- (a) the agreement and by-law shall define the district or districts by metes and bounds or by lots and concessions; Agreement for construction at expense of portion of township.
- (b) the assent to the by-law of those persons qualified to vote on it in the district or districts shall be sufficient and they shall be the only persons qualified to vote on the by-law; Agreement to describe district.

Rates to be levied in district.

- (c) the rates imposed for the share of the cost to be borne by the township shall be imposed upon the rateable property within such district or districts only; and

Debentures to be levied on debentures of township.

- (d) the debentures to be issued and deposited with the Commission shall be a liability of the corporation of the township and any rate required to be levied for payment thereof or for the interest thereon shall be raised, levied and collected upon the whole of the rateable property in the township.

4 Geo. V. c. 31, s. 4, amended.

3. Section 4 of *The Hydro-Electric Railway Act, 1915*, is amended by adding thereto the following subsection:—

Purchasing existing lines.

- (6) The agreement may include in its terms the purchase of any existing electric railway or street railway or any part thereof as part of the line of railway to be constructed and operated by the Commission.

Contract with municipal corporations confirmed as amended.

4. The contract entered into by the Hydro-Electric Power Commission of Ontario with the municipal corporations of the townships of Scarborough, Markham, Pickering, Whitby and Reach and of the town of Whitby and of the Villages of Markham, Stouffville and Port Perry, set out in Schedule "A" hereto annexed, is confirmed and declared to be legal, valid and binding upon the Commission and upon each of the said municipal corporations and the ratepayers thereof and to have been made and entered into in due compliance with the provisions of *The Hydro-Electric Railway Act, 1914*, but subject to the following amendments and alterations:—

4 Geo. V. c. 31.

Amendments.

- (a) The Township of Whitchurch, the Township of Uxbridge, the Town of Newmarket, and the Town of Uxbridge are omitted as parties to the said contract;
- (b) Schedule "A" to the said contract is amended by striking out the paragraph headed "Unionville—Newmarket Section" and substituting therefor the following:—
"UNIONVILLE-STOUFFVILLE JUNCTION."

"A line will run northerly from Unionville approximately up to the centre of Concession V., Township of Markham, to Markham and Whitchurch township line, designated as Stouffville Junction;"

- (c) The paragraph in the said schedule headed "Stouffville Junction—Claremont Section" is amended by striking out the words "Newmarket Section" in the first line and substituting "Stouffville Junction" therefor;
- (d) The said schedule is further amended by striking out the whole of the paragraph headed "Vandorf—Uxbridge" section;

- (e) Schedule "B" to the said agreement is amended by striking out the words and figures: "Township of Whitechurch, \$488,152"; "Township of Uxbridge, \$227,901"; "Town of Newmarket, \$266,986"; "Town of Uxbridge, \$204,665," and by striking out the total at the end of the said schedule, "\$4,346,938," and substituting therefor "\$3,159,234."

5. The execution of separate copies of the said contract by each of the said municipal corporations and by the Commission shall be sufficient execution of the said contract and shall be binding upon the parties thereto in the same manner as if the said contract had been executed by the Commission and by all the municipal corporations as to which said contract is declared by section 3 to be confirmed.

6. By-law Number 877 of the Municipal Corporation of the Township of Scarborough, By-law Number 767 of the Municipal Corporation of the Township of Markham, By-law Number 1031 of the Municipal Corporation of the Township of Pickering, By-law Number 965 of the Municipal Corporation of the Township of Whitby, By-law Number 1317 of the Municipal Corporation of the Township of Reach, By-law Number 877 of the Municipal Corporation of the Township of Whitby, By-law Number 394 of the Municipal Corporation of the Village of Markham, By-law Number 335 of the Municipal Corporation of the Village of Stouffville, and By-law Number 700 of the Municipal Corporation of the Village of Port Perry, being by-laws authorizing the execution of the said contract between the Hydro-Electric Power Commission of Ontario and the said Municipal Corporations, are confirmed and declared to be legal, valid and binding upon the said municipal corporations respectively and the ratepayers thereof and shall not be open to question upon any grounds whatsoever, notwithstanding the requirements of *The Hydro-Electric Railway Act, 1914*, or the amendments thereto, or of any other statute.

7. Sections 1, 2 and 3 shall come into force forthwith, and sections 4, 5 and 6 shall come into force and take effect upon a date to be named by the Lieutenant-Governor in Council by his proclamation.

SCHEDULE "A."

(Section 4).

This indenture made the _____ day of _____ in the year of
our Lord, one thousand nine hundred and fourteen,

Between

The Hydro-Electric Power Commission of Ontario (hereinafter called
the "Commission") of the first part,

and

The Municipal Corporations of the Township of Scarborough, the Township of Markham, the Township of Whitchurch, the Township of Pickering, the Township of Uxbridge, the Township of Whitby, the Township of Reach, the Town of Newmarket, the Town of Uxbridge, the Town of Whitby, the Village of Markham, the Village of Stouffville and the Village of Port Perry (hereinafter called the "Corporations") of the second part.

Whereas pursuant to *The Hydro-Electric Railway Act, 1914*, the Commission was requested to enquire into, examine, investigate and report upon the cost of construction and operation of an electric railway or railways to be constructed through certain districts in which the corporations are situated, together with the probable revenue that would result from the operation of such railway or railways;

And whereas the Commission has furnished the corporations with such a report showing (1) the total estimated cost, operating revenue and expenses of the railway or railways, and (2) the proportion of the capital cost to be borne by each of the corporations as set forth in Schedule "B" attached hereto;

And whereas on receipt of the said report the corporations requested the Commission to construct, equip and operate a system of electric railways (hereinafter called the railway) over the routes laid down in Schedule "A" attached hereto, upon the terms and conditions and in the manner herein set forth;

And whereas the Commission has agreed with the corporations on behalf of the corporations to construct, equip and operate the railway upon the terms and conditions and in the manner herein set forth; but upon the express condition that the Commission shall not in any way be liable by reason of any error or omission in any estimates, plans or specifications for any financial or other obligation or loss whatsoever by virtue of this agreement or arising out of the performance of the terms thereof;

And whereas the electors of each of the corporations have assented to by-laws authorizing the corporations to enter into this agreement with the Commission for the construction, equipment and operation of the railway as laid down in the said schedules, subject to the following terms and conditions;

And whereas the corporations have each issued debentures for the amounts set forth in schedule "B" attached hereto, and have deposited the said debentures with the Commission;

Now therefore this indenture witnesseth:—

1. In consideration of the premises and of the agreements of the corporations herein contained, and subject to the provisions of the said Act, the Commission agrees with the corporations respectively:—

(a) To construct, equip and operate the railway through the districts in which the corporations are situate on behalf of the corporations;

(b) To construct and operate the railway over the routes laid down in schedule "A";

(c) To issue bonds, as provided in paragraph 3 of this agreement, to cover the cost of constructing and equipping the railway;

(d) To furnish as far as possible first-class modern and standard equipment for use on the railway, to operate this equipment so as to give the best service and accommodation possible, having regard to the district served, the type of construction and equipment adopted, and all other equitable conditions, and to exercise all due skill and diligence so as to secure the most effective operation and service of the railway consistent with good management;

(e) To regulate and fix the fares and rates of toll to be collected by the railway for all classes of service;

(f) To utilize the routes and property of the railway for all purposes from which it is possible to obtain a profit;

(g) To combine the property and works of the railway and the power lines of the Commission where such combination is feasible and may prove economical to both the railway and the users of the power lines;

(h) To permit and obtain interchange of traffic with other railways wherever possible and profitable.

(i) To supply electrical power or energy for operation of the railways at rates consistent with those charged to municipal corporations;

(j) To apportion annually the capital costs and operating expenses of all works, apparatus and plant used by the railway in common with the Commission's transmission lines in a fair manner, having regard to the service furnished by the expenditure under consideration;

(k) To apply the revenue derived from operation of the railway and any other revenue derived from the undertaking to the payment of operating expenses (including electrical power), the cost of administration, and annual charges for interest and sinking fund on the money invested, and such other deductions as are herein provided for;

(l) To set aside from any revenue thereafter remaining an annual sum for the renewal of any works belonging in whole or in part to the undertaking;

(m) To pay over annually to the corporations, if deemed advisable by the Commission in the interests of the undertaking, any surplus that may remain after providing for the items above mentioned. The division of such surplus between the corporations to be fixed by the Commission on an equitable basis, having regard in the case of each corporation to the capital invested, the service rendered, the comparative benefits derived, and all other like conditions;

(n) To take active steps for the purpose of constructing, equipping and operating the railway at the earliest possible date after the execution of this agreement by the corporations and the deposit of debentures as called for under clause 2 (b) hereof and to commence operation of each section as soon as possible after its completion;

(o) To make such extensions to the railway described in schedule "A" as may appear advantageous and profitable from time to time.

2. In consideration of the premises and of the agreements herein set forth, each of the corporations for itself, and not one for the other, agrees with the Commission:—

(a) To bear its share of the cost of constructing, equipping, operating, maintaining, repairing, renewing and insuring the railway and its property and works as established by the Commission, subject to adjustments and apportionment between the corporations by the Commission from time to time;

(b) To issue debentures for the amounts set forth in schedule "B" maturing in fifty years from the date of issue thereof, and payable yearly at the Bank, at Toronto, Ontario. Such debentures shall be deposited with the Commission previous to the issuing of the bonds mentioned above, and may be held or disposed of from time to time by the Commission, as provided for in clause 4 hereof, in such amounts, at such rates of discount or premium, and on such terms and conditions as the Commission in its sole discretion shall deem to be in the interests of the railway, the proceeds of such debentures being used solely for the purposes herein contained. The amount of debentures of each corporation sold or disposed of from time to time shall be such proportion as may be fixed by the Commission of the total amount of debentures, due regard being given to the capital invested, the service rendered, the comparative revenue derived, and all other equitable conditions;

(c) To make no agreement or arrangement with and to grant no bonus, license or other inducement to any other railway or transportation company without the written consent of the Commission;

(d) To keep, observe and perform the covenants, provisoes and conditions set forth in this agreement intended to be kept and observed and performed by the corporations, and to execute such further or other documents and to pass such by-laws as may be requested by the Commission for the purpose of fully effectuating the objects and intent of this agreement;

(e) To furnish a free right of way for the railway and for the power lines of the Commission over any property of the corporations upon being so requested by the Commission, and to execute such conveyance thereof or agreement with regard thereto as may be desired by the Commissioners.

3. It shall be lawful and the Commission is hereby authorized to create or cause to be created an issue of bonds, and to sell or dispose of the same on behalf of the corporations. Such bonds to be charged upon and secured by the railway, and all the assets, rights, privileges, revenues, works, property and effects belonging thereto or held or used in connection with the railway constructed, acquired, operated and maintained by the Commission under this agreement, and to be for the total amounts mentioned in schedule "B" hereto attached; provided that the Commission may, upon obtaining the consent as herein defined of the majority of the corporations, increase the said bond issue by any amount necessary to cover the capital cost of extending the railway, and may also without such consent increase the said bond issue to cover the cost of additional works or equipment of any kind for use on the railway to an extent not exceeding ten per cent. (10%) of the bonds issued from time to time. In order to meet and pay such bonds and interest as the same becomes due and payable the Commission shall in each year after the expiration of ten years from the date of the issue of the bonds out of the revenue of the railway after payments of operating expenses (including electrical power) and the cost of administration set aside a sufficient sum to provide a sinking fund for the purpose of redeeming the same at maturity. Debentures issued by the corporations in compliance with clause (2b) hereof, shall, to the extent of the par value of any bonds outstanding from time to time, be held or disposed of by the Commission in trust for the holders of such bonds as collateral security for payment thereof, it being understood and agreed that in the event of any increase of the said bond issue each corporation shall, upon the request of the Commission, deposit with the Commission additional debentures as described in clause 2 (b) hereof, to be held or disposed of by the Commission as collateral security for such increase of the said bond issue, and that any debentures held by the Commission in excess of the par value of the outstanding bonds from time to time may be held or disposed of by the Commission to secure payment of any deficit arising from the operation of the railway.

4. In the event of the revenue derived from the operation of the undertaking being insufficient in any year to meet the operating expenses (including electrical power), the cost of administration and the annual charges for interest and sinking fund on the bonds, and for the renewal of any works belonging in whole or in part to the railway, such deficit shall be paid to the Commission by the corporations upon demand of and in the proportion adjusted by the Commission. In the event of the failure of any corporation to pay its share of such a deficit as adjusted by the Commission, it shall be lawful for the Commission in the manner provided in clause 2 (b) to dispose of debentures held by the Commission as security for any such deficit. Any arrears by any corporation shall bear interest at the legal rate.

5. Should any corporation fail to perform any of the obligations to the Commission under this agreement, the Commission may, in addition to all other remedies and without notice, discontinue the service of the railway to such corporation in default until the said obligation has been fulfilled, and no such discontinuance of service shall relieve the corporation in default from the performance of the covenants, provisos and conditions herein contained.

6. In case the Commission shall at any time or times be prevented from operating the railway or any part thereof by strike, lock-out, riot, fire, invasion, explosion, act of God, or the King's enemies, or any other cause reasonably beyond its control, then the Commission shall not be bound to operate the railway or such part thereof during such time; but the corporations shall not be relieved from liability or payment under this agreement, and as soon as the cause of such interruption is removed the Commission shall, without any delay, continue full operation of the railway, and each of the corporations shall be prompt and diligent in doing everything in its power to remove and overcome any such cause or causes of interruption.

7. It shall be lawful for, and the corporations hereby authorize the Commission to unite the business of the railway with that of any other railway system operated in whole or in part by the Commission, and to exchange equipment and operators from one system to the other, proper provision being made so that each system shall pay its proportionate share of the cost of any equipment used in common.

8. If at any time any other municipal corporation applies to the Commission for an extension of the railway into its municipality the Commission shall notify the applicant and the corporations, in writing, of a time and place to hear all representations that may be made as to the terms and conditions relating to such proposed extension. If, on the recommendation of the Commission, such extension shall be authorized, without discrimination in favor of the applicant, as to the cost incurred or to be incurred for or by reason of any such extension, the Commission may extend the railway upon such terms and conditions as may appear equitable to the Commission.

No such application for an extension of the railway into any municipality the corporation of which is not a party to this agreement shall be granted if it is estimated by the Commission that the cost of service of the railway to the corporations parties hereto will be thereby increased or the revenue and accommodation be injuriously affected without the written consent of the majority of the corporations parties hereto. •

9. The consent of any corporation required under this agreement shall mean the consent of the council of such corporations, such consent being in the form of a municipal by-law duly passed by the council of the corporation.

10. The Commission shall at least annually, adjust and apportion between the corporations the cost of construction, equipment, operation, interest, sinking fund, and also the cost of renewing the property of the railway.

11. Every railway and all the works, property and effects held and used in connection therewith, constructed, acquired, operated and maintained by the Commission under this agreement and the said Act shall be vested in the Commission on behalf of the corporations; but the Commission shall be entitled to a lien upon the same for all money expended by the Commission under this agreement and not repaid.

12. Each of the corporations covenants and agrees with the other:—

(a) To carry out the agreements and provisions herein contained;

(b) To co-operate by all means in its power at all times with the Commission to create the most favorable conditions for the carrying out of the objects of this agreement and of the said Act, and to increase the revenue of the railway and ensure its success.

13. In the event of any difference between the corporations the Commission may, upon application, fix a time and place to hear all representations that may be made by the parties, and the Commission shall adjust such differences, and such adjustments shall be final. The Commission shall have all the powers that may be conferred upon a commissioner appointed under the *Act Respecting Enquiries Concerning Public Matters*.

14. This agreement shall continue and extend for a period of fifty years from the date hereof, and at the expiration thereof be subject to renewal with the consent of the corporations from time to time for like periods of fifty years, subject to adjustment and re-apportionment as herein provided for the purposes of this agreement as though the terms hereof had not expired. At the expiration of this agreement the Commission shall determine and adjust the rights of the corporations, having regard to the amounts paid or assumed by them respectively under the terms of this agreement, and such other considerations as may appear equitable to the Commission and are approved by the Lieutenant-Governor in Council.

15. This agreement shall not come into effect until it has been sanctioned by the Lieutenant-Governor in Council.

In witness whereof the Commission and the corporations have respectively affixed their corporate seals and the hands of their proper officers.

THE HYDRO-ELECTRIC POWER COMMISSION OF ONTARIO.

A. BECK, *Chairman*.

I. B. LUCAS.

W. K. McNAUGHT.

(L.S.)

THE CORPORATION OF THE TOWNSHIP OF SCARBOROUGH.

J. G. CONNELL, *Reeve*.

W. D. ANNIS, *Clerk (pro tem)*.

(L.S.)

THE CORPORATION OF THE TOWNSHIP OF MARKHAM.

JOHN NIGH, *Reeve*.

C. H. STIVER, *Clerk*.

(L.S.)

THE CORPORATION OF THE TOWNSHIP OF PICKERING.

WILLIAM W. SPARKS, *Reeve*.

D. R. BEATON, *Clerk*.

(L.S.)

THE CORPORATION OF THE TOWNSHIP OF WHITBY.

(L.S.)

JOHN J. MOORE, *Reeve.*
D. HOLLIDAY, *Clerk.*

THE CORPORATION OF THE TOWNSHIP OF REACH.

(L.S.)

RALPH MCINTYRE, *Reeve.*
WM. T. DOBSON, *Clerk.*

THE CORPORATION OF THE TOWN OF WHITBY.

(L.S.)

JOHN E. MILLER, *Mayor.*
JOSEPH WHITE, *Clerk.*

THE CORPORATION OF THE VILLAGE OF MARKHAM.

(L.S.)

R. FLEMING, *Reeve.*
N. WHITE, *Clerk.*

THE CORPORATION OF THE TOWNSHIP OF STOUFFVILLE.

(L.S.)

W. A. SANGSTER, *Reeve.*
JOHN URQUHART, *Clerk.*

THE CORPORATION OF THE VILLAGE OF PORT PERRY.

(L.S.)

GEORGE GEROW, *Reeve.*
WM. H. HARRISS, *Clerk.*

SCHEDULE "A."

ROUTES.

Toronto—Unionville Section.

From the eastern limits of the City of Toronto, Victoria Park Avenue, line will parallel the Canadian Northern Railway on the south side to Pharmacy Avenue, thence take a direct route to the south-east corner of lot 29, con. C, Township of Scarborough. Crossing the Kennedy Road, line will run northerly about the centre of lot 28, as far as con. 1, Township of Scarborough, from which point approximately parallel to the Grand Trunk Railway to Unionville.

Unionville—Brooklin Section.

The line will cross the Grand Trunk Railway on road allowance between lots 10 and 11, con. V, Township of Markham, and run on this to con. VI, at which point line will cross to lot 11 and parallel the road to the neighborhood of Markham Village, where it will turn northerly and cross con. VIII road south of Grand Trunk Railway; continuing easterly line will run through Locust Hill along or parallel with road allowance between lots 10 and 11. From the Markham-Pickering Township line, line will cross to the centre of con. VI, Township of Pickering, and continue approximately through the centre of the concession to Brooklin, excepting near Greenwood, where the line will be diverted.

Unionville—Newmarket Section.

The line will run northerly from Unionville approximately up the centre of con. V, Township of Markham, and of con. V, Township of Whitchurch, to or near lot 5, thence to centre of concession IV, Township of Whitchurch, to or near lot 27, and thence north-westerly to Newmarket.

Stouffville Junction—Claremont Section.

At a point on Unionville-Newmarket section at Markham-Whitchurch Township line, designated Stouffville Junction, line will run easterly a short distance south of the Township line, through Stouffville to the Markham-Pickering Township line and thence through the middle of concession IX, Township of Pickering, to Claremont.

Vandorf—Uxbridge Section.

From Vandorf on the Unionville-Newmarket section, line will run near road allowance between lots 15 and 16, Township of Whitchurch, to the north side of Musselman's Lake; thence north-easterly to a point about ¼ mile south of Siloam and thence due east to Uxbridge, paralleling the road allowance ¼ mile to the south.

Whitby Section.

Line will leave Port Perry in the Neighborhood of the Fair Grounds and run direct to Manchester P.O., thence south to meet the Grand Trunk Railway near Highpoint. Line will continue southerly a short distance west of the Grand Trunk Railway, passing about ½ mile east of Ashburn and thence through lot 24 in the Township of Whitby to Brooklin.

From Brooklin the line will run parallel to the road allowance between lots 28 and 29, Township of Whitby, as far south as the Canadian Pacific Railway, in the Town of Whitby. The line will then be diverted to Henry Street and thence to the lake front.

SCHEDULE "B."

Name of Municipal Corporation.	Total amount of debentures to be issued by the respective municipalities and deposited with the Commission under Clause 2 (b).
Township of Scarborough	\$565,714 00
Township of Markham	803,939 00
Township of Whitchurch	488,152 00
Township of Pickering	578,115 00
Township of Uxbridge	227,901 00
Township of Whitby	554,619 00
Township of Reach	235,722 00
Village of Markham	48,762 00
Village of Stouffville	75,281 00
Village of Port Perry	113,308 00
Town of Newmarket	266,986 00
Town of Uxbridge	204,665 00
Town of Whitby	183,774 00

Total amount of bonds to be issued, mentioned in Clause 3\$4,346,938 00

The following Act was also passed at the last session of the Legislature to validate certain by-laws passed and contracts entered into with the various municipalities, giving the Commission additional powers for acquiring easements, and making further regulations as to wiring, equipment, etc.

The Power Commission Act, 1915

AN Act to amend The Power Commission Act.

Assented to 8th April, 1915.

HIS MAJESTY, by and with the advice and consent of the Legislative Assembly of the Province of Ontario, enacts as follows:—

Short title.

1. This Act may be cited as *The Power Commission Act, 1915*.

Rev. Stat.
c. 39, s. 5,
repealed.

2. Section 5 of *The Power Commission Act* is repealed and the following substituted therefor:—

Salary of
chairman.

5.—(1) The Chairman of the Commission shall be paid an annual salary of \$6,000 per annum, and the same shall be a charge upon and payable out of the Consolidated Revenue Fund of Ontario.

Other re-
muneration
of com-
missioners.

(2) The Chairman and each of the other members of the Commission may be paid such annual sum for their services as members of the Commission as may be determined by the Lieutenant-Governor in Council, out of moneys to be provided as set out in clause *c* to section 23 of this Act, as amended by section 4 of *The Power Commission Act, 1914*.

Seat of
member
who is a
member of
Assembly
not vacated
nor
penalties
incurred.

(3) Notwithstanding anything contained in *The Legislative Assembly Act* the election of the chairman or of any other member of the Commission if a member of the Assembly, shall not by reason of the payment to him of any salary or other remuneration under this Act, or the acceptance thereof be avoided, nor shall he vacate or forfeit his seat or incur any of the penalties imposed by that Act for sitting and voting as a member of the Assembly.

Commence-
ment of
sub-
section 2.

(a) Subsection 2 and this subsection shall take effect as from the 1st day November, 1914, and shall apply to the services of any member of the Commission since that date.

Rev. Stat.
c. 39,
s. 8 (b),
repealed.

3. Clause (b) of section 8 of *The Power Commission Act* is repealed.

4. Section 9 of *The Power Commission Act* is amended by striking out all the words therein down to and including the word "thereof" in the fourth line and inserting in lieu thereof the words "Subject to the provisions of sections 10 and 10a whenever the Commission is authorized by the Lieutenant-Governor in Council to exercise any of the compulsory powers mentioned in section 8, or which are conferred upon the Commission by any other provision, the Commission in respect thereof."

Rev. Stat.
c. 39, s. 9,
amended.

Exercise of
powers of
expropria-
tion.

5. Subsections 1 and 2 of section 10 of *The Power Commission Act* are repealed and the following substituted therefor:—

Rev. Stat.
c. 39, s. 10,
subs. 1
and 2,
repealed.

Powers as
to taking
or acquiring
lands, ease-
ments, etc.

- (1) Whenever the Commission has been authorized by the Lieutenant-Governor in Council to exercise any of the powers set out in clause *c* of section 8 the Commission may acquire by purchase, lease or otherwise, or without the consent of the owners thereof or other persons interested therein, enter upon, take possession of, expropriate, and use such lands and such rights or easements, in lands as may be required for the purpose of constructing, erecting, maintaining, and operating thereon lines of wires, poles, conduits or other conductors or devices, with all other plant, appliances and equipment required therefor to transmit, distribute, supply or furnish electricity at such voltage as the Commission may determine, through, over, under, along or across any lands and premises, public highways or public places, streams, waters, watercourses, or any bridge, viaduct or railway.
- (2) The powers mentioned in subsection 1 may be exercised without any prerequisite or preliminary action or proceeding and without any other sanction or authority than is conferred by this Act, and shall include the right to take, acquire or retain possession for such time as the Commission may deem proper, and under agreement with the owner or person interested, or without his consent, of such lands or of such estate, right, title, privilege, easement or interest in, over, upon, or in respect of or relating to any land as to the Commission may seem desirable or expedient.
- (2a) Whenever the Commission acts or has acted under the authority conferred by subsection 1, compensation shall be made to the owners or persons interested for the lands taken and for all damage to land necessarily resulting from the exercise of the powers granted to the Commission by that subsection, and in fixing such compensation regard shall in all cases be had to the value of the lands taken or to the nature and extent of the estate, right, privilege, easement or interest which the Commission decides to take and acquire in, over, upon or in respect of the lands, as the case may be, and the compensation shall be based thereon.

Mode of
exercising
powers and
extent of
powers.

Compensa-
tion.

Section 5
to be re-
troactive.

6. The amendment made by the last preceding section shall be deemed to have been in force and shall take effect as from the first day of March, 1914.

Rev. Stat.
c. 39, s. 8,
cl. c,
amended.

7. Clause (c) of section 8 of *The Power Commission Act* is amended by striking out all the words therein after the word "person" in the eighteenth line.

Rev. Stat.
c. 39,
amended.

8. *The Power Commission Act* is amended by inserting therein the following as section 10a:—

Removal of
trees and
obstructions
beside right
of way.

10a. For greater certainty, but not so as to restrict the general powers conferred upon the Commission by or under the authority of this Act, it is declared that such powers shall include the right to enter upon any land upon either side of the right-of-way acquired for the transmission or distribution lines or works of the Commission, or upon any land upon either side of such lines or works, and to fell or remove any trees or any branches of a tree or any other obstruction upon any such land or upon any public highway or place which, in the opinion of the Commission, it is necessary to fell or remove, but subject always to the payment of compensation as provided in section 10 of this Act, and the said section shall apply to the exercise of the powers mentioned in this section.

Sections 7
and 8
retroactive.

9. The amendments made by the last two preceding sections shall be deemed to have been in force and shall take effect as from the first day of March, 1914.

Rev. Stat.
c. 39,
amended.

10. *The Power Commission Act* is amended by adding thereto the following section:—

Selling
lands no
longer
required.

10b. The Commission may sell and dispose of any part of the lands purchased or acquired under the provisions of this Act which may be found unnecessary for the purposes of the Commission.

Rev. Stat.
c. 39, s. 23,
4 Geo. V,
c. 16, s. 4,
amended.

11.—(1) The clause lettered c in section 23 of *The Power Commission Act* as amended by section 4 of *The Power Commission Amendment Act, 1914*, is amended by adding at the end thereof the words, "and such sum as the Lieutenant Governor in Council may direct to cover the difference between the four per cent. interest charged on the money so expended on capital account and all charges and expenses of providing such money."

Interest
charges.

Commence-
ment of
section.

(2) The amendment made by subsection 1 shall take effect as from the 31st day of October, 1914, and as to any money so provided since the said date.

12.—(1) Section 37 of *The Power Commission Act* as amended by sections 6 and 7 of *The Power Commission Act, 1914*, is repealed and the following substituted therefor:—

Rev. Stat.
c. 39, s. 37,
and 4 Geo.V.
c. 16, ss. 6, 7,
repealed.

37.—(1) The Commission may make regulations as to the construction, operation, and inspection of the works, plant, machinery, apparatus, appliances, devices, material and equipment for the transmission, distribution, connection, installation and use of electrical power or energy by municipal corporations, and by any railway, street railway, electric lighting, power or transmission company, or by any other company, firm or individual transmitting, distributing, installing or using electrical power or energy or whose undertaking, works or premises are connected with any plant for transmission or distribution of electrical power or energy, and the Commission may impose penalties for the breach of any such regulations.

Regulations
as to equip-
ment.

(2) The Commission may at any time order the installation, removal or alteration of any works, plant, machinery, apparatus, appliances, devices, material or equipment as in the opinion of the Commission may be necessary for the safety of the public or of workmen or for the protection of property against damage by fire or otherwise.

Ordering
changes in
equipment,
etc.

(3) The Commission may appoint inspectors for the purpose of seeing that the regulations and orders of the Commission made under the authority of this section or of any provision of this Act are carried out, may fix and collect the fees to be paid by any corporation, company, firm, or individual upon any inspection made under the regulations or by order of the Commission, and may provide for the payment of the remuneration, travelling and other expenses of the inspector out of the fees so collected or out of the funds appropriated for carrying on the work of the Commission.

Inspection.

(2) Where prior to the passing of this Act an inspector has been appointed under section 37 of *The Power Commission Act* and the amendments thereto for any municipality or for two or more municipalities, such inspector shall remain in office and shall continue to perform the duties imposed upon him by the regulations of the Commission until a direction in writing has been given by the Commission to the clerk of the municipality or the clerks of the municipalities for which the inspector was appointed that he shall cease to act as such inspector and shall account for and hand over to the municipal corporation or corporations by or for which he was appointed all fees, books, accounts, and documents in his possession as such inspector.

Where in-
spectors
already
appointed.

(3) Upon direction being given by the Commission as provided in subsection 2, every by-law providing for the appointment of an inspector or inspectors for the municipality or municipalities and defining the

By-laws as
to inspec-
tion to
cease to
have effect.

qualification and duties of such inspector or inspectors shall be deemed to be repealed and of no further force or effect.

Rev. Stat.
c. 39, s. 39,
amended.

13. Section 39 of *The Power Commission Act* is amended by adding thereto the following clause:—

Application
of surplus
receipts.

- (e) To the extent to which such surplus is derived from the supply of electrical power or energy for the public buildings of the corporation or the lighting of the streets of the municipality or for the operation of any street railway or electric railway or any public utility owned and operated by the corporation,—by payment over of such surplus or of such portion thereof as the said Commission may deem proper to the treasurer of the municipality to be applied to the general purposes of the corporation.

Rev. Stat.
c. 39, s. 39,
amended.

14.—(1) Section 39 of *The Power Commission Act* is amended by adding thereto the following subsections:—

Application
of section
notwith-
standing
special
provisions.

- (2) It is declared that subsection 1 shall apply to every municipal corporation or municipal commission which has entered into a contract with the Commission for the supply of electrical power or energy, notwithstanding any provision to the contrary or any inconsistent provision in any general or special Act heretofore passed.

Liability
for mis-
application
of surplus
receipts.

- (3) Any member of the council of a municipal corporation or a municipal commission who is in any manner a party to any other disposition of such surplus than that directed by the Commission shall forfeit his office, and proceedings may thereupon be taken against him as provided in *The Municipal Act* in the case of a member of a municipal council who has become disqualified.

Disqualifi-
cation.

- (4) If it is found upon such proceedings that such member of the municipal council or commission has forfeited his office, he shall be disqualified from holding any municipal office for a period of two years thereafter.

Commence-
ment of
section.

- (2) This section shall come into force on the 1st day of January, 1916.

Rev. Stat.
c. 39,
amended.

15. *The Power Commission Act* is amended by adding thereto the following sections:—

Commission
to be estab-
lished in
every city,
or town,
under con-
tract with
commission.

47. Notwithstanding anything in any general or special Act contained, in and for the year 1916 and thereafter subsection 5 of section 34 of *The Public Utilities Act* shall apply in every city and town which has entered into a contract with the Commission for the supply of electrical power or energy,

and a Commission shall be established under the provisions of Part III of *The Public Utilities Act* for the control and management of the construction, operation and maintenance of all works undertaken by the corporation for the distribution and supply of electrical power or energy. Rev. Stat. c. 204.

- (2) In a city having a population of 100,000 or over according to the last enumeration of the assessor, the corporation of which has entered into a contract with the Commission under this Act, the Commission to be established for the control and management of the construction, operation and maintenance of all works undertaken by the corporation for the distribution and supply of electrical power or energy may, if the council of the city by by-law so declares, consist of three members, one of whom shall be appointed by the municipal council of the city at its first meeting in each year, one shall be appointed by the Commission and the third of whom shall be the mayor of the city, and the members so appointed shall hold office for two years or until their successors are appointed. Commission—how composed in city of 100,000 or over.

48.—(1) No member or officer of any Commission appointed or elected for the control and management of the construction, operation and maintenance of works undertaken by a municipal corporation for the distribution and supply of electrical power or energy received from the Commission shall, directly or indirectly Members of commission not to be interested in certain companies, etc.

(a) Hold, purchase, take or become interested in any stock, share, bond, debenture or other security or property of any company or individual engaged in the generation, distribution or supply of electrical power or energy in the municipality or holding or controlling works for that purpose; or

(b) Have any interest in any device, appliance, machine, patented process or article, or any part thereof, which may be required or used as part of the equipment required in the generation, distribution or supplying of electrical power or energy.

- (2) If any such stock, share, bond, debenture or other security, property, device, appliance, machine, patented process or article, or any part thereof or any interest therein, shall come to or vest in any member or officer of a municipal commission by will or succession for his own benefit, he shall, within three calendar months after the same shall so come to or vest in him, absolutely sell and dispose of the same or his interest therein. Commissioner to part with any such property devolving on him.

Not to be
directors
or officers
of certain
companies

- (3) No member or officer of any such municipal Commission shall act as director or officer of any company which has power to invest any portion of its funds in the securities of a company generating, distributing or supplying electrical power or energy or any appliance therefor in the same municipality.

Right to
enter on
lands to
put up
wires, etc.

49. To remove doubts it is declared that a municipal corporation which has entered into a contract for the supply of electrical power or energy by the Commission, may by its officers, agents, servants and workmen enter into and upon the lands of any person, including lanes, courts, yards and buildings for the purpose of placing overhead or underground wires with their appurtenances without the consent of the owner or occupant of such property, but subject to the payment of compensation for any damage caused thereby, to be determined in the manner provided by *The Municipal Act* where a municipal corporation enters upon and takes land for the purposes of the corporation, but leave of a judge or payment into court shall not be necessary before the exercise of the powers in this section declared to be vested in the municipal corporation.

Rev. Stat.
c. 192.

Agreements
to extend
to commis-
sions,
boards, etc.

50. Where by this Act or by any contract heretofore or hereafter entered into between the Commission and a municipal corporation, duties are imposed upon or covenants or undertakings are entered into by the municipal corporation, the same shall extend to and be deemed to include and shall be binding upon any Commission having the management or control of any public utility or other municipal undertaking for and on behalf of the municipal corporation, and any board of education, board of high school trustees or board of public school trustees appointed or elected for the municipality represented by the municipal corporation.

Enforcement
of agree-
ments with
corpora-
tions.

51. Notwithstanding any provision contained in the contract or agreement entered into between a municipal corporation and the Commission providing for the determination of questions arising under the contract or agreement, or for the settlement of any dispute between the municipal corporation and the Commission by the Lieutenant-Governor in Council or in any other manner, the Commission may bring an action for any breach of the contract or agreement on the part of the municipal corporation, and the Court may in any such action grant an injunction restraining the municipal corporation from doing any act or continuing any such breach, may order the municipal corporation to supply any omission or to do any act required to be done by the corporation under the terms of the contract or agreement, and may award to the Commission such sum as damages for any such breach as the Court may consider a fitting penalty to impose upon the municipal corporation therefor.

16. The municipal corporation of the Town of Clinton, the municipal corporation of the Town of Simcoe, the municipal corporation of the Town of Sandwich, the municipal corporation of the Town of Wallaceburg, the municipal corporation of the Town of Dresden, the municipal corporation of the Town of Tilbury, the municipal corporation of the Village of Lucan, the municipal corporation of the Village of Woodbridge, the municipal corporation of the Village of Bolton, the municipal corporation of the Village of Streetsville, the municipal corporation of the Village of Ayr, the municipal corporation of the Village of Drumbo, the municipal corporation of the Village of Waterford, the municipal corporation of the Police Village of Princeton, the municipal corporation of the Police Village of Plattsville, the municipal corporation of the Police Village of Mount Brydges, the municipal corporation of the Police Village of Burford are added as parties of the second part to the contract set out in Schedule "A" to *The Power Commission Act, 1909*, as varied, confirmed and amended by the said Act, and as further varied, confirmed and amended by the Act passed in the tenth year of the reign of His late Majesty King Edward VII, chaptered 16, and by subsequent Acts and by this Act, and the said contract shall be binding upon the parties thereto, respectively, as to the Town of Clinton, from the 7th day of April, 1913; as to the Town of Simcoe, from the 1st day of November, 1914; as to the Town of Sandwich, from the 18th day of February, 1915; as to the Town of Wallaceburg, from the 30th day of June, 1914; as to the Town of Dresden, from the 14th day of September, 1914; as to the Town of Tilbury, from the 1st day of July, 1914; as to the Village of Lucan, from the 1st day of July, 1914; as to the Village of Woodbridge, from the 7th day of May, 1914; as to the Village of Bolton, from the 7th day of December, 1914; as to the Village of Streetsville, from the 1st day of May, 1914; as to the Village of Ayr, from the 1st day of September, 1914; as to the Village of Drumbo, from the 1st day of April, 1914; as to the Village of Waterford, from the 8th day of September, 1914; as to the Police Village of Princeton, from the 12th day of March, 1914; as to the Police Village of Plattsville, from the 18th day of March, 1913; as to the Police Village of Mount Brydges, from the 15th day of January, 1915; as to the Police Village of Burford, from the 14th day of November, 1914.

Certain corporations added as parties to contract with Commission.

Time from which contract to be binding on corporations added.

17. The names of the said municipal corporations are added to Schedule "B" of the said contract, and such schedule shall be read as containing the particulars set out in Schedule "A" to this Act.

Amendment of Schedule to contract.

18. The contracts set out as Schedules "A," "B," "C," "D," "E," and "F" hereto between the Hydro-Electric Power Commission of Ontario and the corporations of the City of St. Catharines, the Police Village of Brechin, the Village of Creemore, the Police Village of Williamsburg, the Township of Grantham, and the Township of Tay are hereby confirmed and declared to be legal, valid and binding upon the parties thereto respectively, and shall not be open to question upon any grounds whatsoever, notwithstanding the requirements of *The Power Commission Act*, or the amendments thereto or any other statute.

Certain other contracts confirmed.

Rev. Stat. c. 39.

By-laws
confirmed.

19. By-laws Nos. 2,592 and 2,593 of the corporation of the City of St. Catharines; By-laws Nos. 1,251 and 1,280 of the corporation of the City of Brantford; By-laws Nos. 301 and 998 of the corporation of the City of Chatham; By-laws Nos. 14 and 13 of the corporation of the Town of Clinton; By-laws Nos. 634 and 641 of the corporation of the Town of Simcoe; By-law No. 524 of the corporation of the Town of Sandwich; By-laws Nos. 338, 361 (a) and 419 of the corporation of the Town of Wallaceburg; By-laws Nos. 352 and 420 of the corporation of the Town of Dresden; By-laws Nos. 68 and 66 of the corporation of the Town of Tilbury; By-law No. B841 of the corporation of the Town of Brockville; By-law No. 360 of the corporation of the Town of Huntsville; By-laws Nos. 10 and 9 of the corporation of the Village of Lucan, but subject to the provisions of section 21; By-laws Nos. 316 and 318 of the corporation of the Village of Woodbridge; By-laws Nos. 493 and 494 of the corporation of the Village of Bolton; By-laws Nos. 222 and 226 of the corporation of the Village of Ayr; By-laws Nos. 500 and 501 of the corporation of the Village of Streetsville; By-laws Nos. 513 and 586 of the corporation of the Village of Drumbo; By-laws Nos. 172 and 164 of the corporation of the Village of Waterford; By-laws Nos. 248 and 249 of the corporation of the Village of Creemore; By-laws Nos. 542 and 532 of the corporation of the Township of Caradoc; By-laws Nos. 815 and 830 of the corporation of the Township of Burford; By-laws Nos. 9 and 719 of the corporation of the Township of Williamsburg; By-laws Nos. 467 and 470 of the corporation of the Township of Brechin; By-laws Nos. 658 and 657 of the corporation of the Township of Delaware; By-laws Nos. 722, 723 and 724 of the corporation of the Township of Westminster; By-laws Nos. 239 and 250 of the corporation of the Township of Tilbury West; By-law No. 262 of the corporation of the Township of Grantham; By-law No. 597 of the corporation of the Township of Tay; By-laws Nos. 558, 572, 574, 587 and 588 of the corporation of the Township of Blenheim, are confirmed and declared to be legal, valid and binding upon such corporations and the ratepayers thereof, respectively, and shall not be open to question upon any ground whatsoever, notwithstanding the requirements of *The Power Commission Act*, or the amendments thereto or of any other statute.

By-law of
Township of
Artemesia
confirmed.

20. By-law No. 788 of the Township of Artemesia, in the County of Grey, in the Province of Ontario, set out in Schedule H, to close portions of certain road allowances in the said township, is confirmed and declared to be legal, valid for all purposes and binding upon the corporation of the township and the ratepayers thereof, anything in any general or special Act, or in any by-law or agreement, to the contrary notwithstanding.

Claims for
compensation
against
Township of
Artemesia.

21. The corporation of the Township of Artemesia shall not be liable for the payment of any damages or compensation to any person with respect to the closing of such road allowances, but every such claim shall be and may be enforced against the Hydro-Electric Power Commission of Ontario in the same manner and to the same extent as in the case of a like claim against a municipal corporation under *The Municipal Act*,

Rev. Stat.
c. 192.

and the provisions of that Act as to the determination of such claims shall *mutatis mutandis* apply.

22. Notwithstanding the confirmation of By-law No. 9 for 1914 of the corporation of the Village of Lucan by section 18, the municipal corporation of the Village of Lucan may amend said by-law by increasing the rate of interest which may be paid upon the debentures to be issued thereunder from four and one-half per cent. to five and one-half per cent. and by making such other amendments to the said by-law as may be necessary to effect such change, but it shall not be necessary to submit for the assent of the electors any such amending by-law or to re-submit By-law No. 9 of 1914 as so amended or to observe any other of the formalities prescribed in *The Municipal Act* in the case of money by-laws and the debentures issued thereunder.

By-law of
Village of
Lucan may
be amended

SCHEDULE "A."

Additions to Schedule "B" to the contract set out in Schedule "A" to 9 Edw. VII., c. 19.

Name of Municipal Corporation.	Quantity of power applied	For in h.p.	Maximum price of power at Niagara Falls.	No. of volts.	Estimate maximum cost of power ready for distribution in municipality.		Estimate proportionate part of cost to construct transmission line, transformer stations and works for nominally 30,000 h.p., with total capacity of 60,000 h.p.		Estimate of proportionate part of line loss and of part cost to operate, maintain, repair, renew and insure transmission line, transformer stations and works for nominally 30,000 h.p. with total capacity of 60,000 h.p.	
					\$	¢	\$	¢	\$	¢
Clinton	300	300	.....	.....	\$41	00	\$94,740	00	\$4,105	00
Lucan	100	100	.....	.....	47	74	35,132	00	1,836	00
Woodbridge	100	100	.....	.....	33	83	21,807	00	1,218	00
Bolton	250	250	.....	.....	43	00	75,623	00	4,114	00
Streetsville	200	200	.....	.....	26	00	26,926	00	1,800	00
Ayr	100	100	.....	.....	37	40	24,661	00	1,410	00
Drumbo	25	25	.....	.....	40	73	6,855	75	395	50
Princeton	25	25	.....	.....	65	95	12,530	75	697	00
Plattsville	100	100	.....	.....	49	27	35,083	00	1,992	00
Mount Brydges	25	25	.....	.....	46	56	8,704	00	434	17
Simcoe	200	200	.....	.....	35	00	50,194	00	3,193	00
Waterford	150	150	.....	.....	39	00	39,140	00	3,230	00
Burford	50	50	.....	.....	37	50	12,251	00	714	00
Sandwich	200	200	.....	.....	.....	.....	.....	.....	.....	.....
Wallaceburg	500	500	.....	.....	38	45	135,205	00	6,883	00
Dresden	200	200	.....	.....	43	00	73,902	00	3,844	00
Tilbury	200	200	.....	.....	39	45	84,238	00	4,244	00

SCHEDULE "B."

This indenture made (in duplicate) this first day of December, in the year of our Lord one thousand nine hundred and thirteen.

Between

The Hydro-Electric Power Commission of Ontario, hereinafter called the "Commission," party of the first part;

and

The Municipal Corporation of the City of St. Catharines, hereinafter called the "Corporation," party of the second part.

Whereas pursuant to an Act to provide for the transmission of electrical power to municipalities the Corporation applied to the Commission for a supply of power and the electors of the Corporation assented to a by-law authorizing the Corporation to enter into a contract with the Commission for such power;

1. Now therefore this indenture witnesseth that in consideration of the premises and of the agreements of the Corporation set forth, subject to the provisions of said Act and amendments and of the said contract, the Commission agrees with the Corporation:—

(a) To reserve and deliver at the earliest possible date 2,000 h.p. of electrical power to the Corporation.

(b) At the expiration of thirty (30) days' notice in writing, which may be given by the Corporation from time to time during the continuance of this agreement, to reserve and deliver to the Corporation additional electrical power when called for in blocks of 100 h.p. each.

(c) To use at all times first class, modern, standard, commercial apparatus and plant, and to exercise due skill and diligence so as to secure the most perfect operation of the plant and apparatus of the Corporation.

(d) Power shall be delivered to the Corporation at approximately 26,400 or 12,000 volts.

2. In consideration of the premises and of the covenants and agreements herein set forth, the Corporation agrees with the Commission:—

(a) To use all diligence by every lawful means in its power to prepare for the receipt and use of the power dealt with by this agreement, so as to be able to give notice as specified in paragraph 1 (a).

(b) Subject to the provisions of paragraph 2 (h) herein to pay the Commission the cost price per h.p. per annum to the Commission for all power taken.

(c) Further to pay annually interest at the rate of four per cent. (4%) per annum on moneys expended, if any, by the Commission on capital account for the construction of necessary works, if any, required to supply said power for the said Corporation.

(d) Also to pay an annual part of the cost of construction of the said works so as to form in 30 years a sinking fund for the retirement of any securities issued by the Province of Ontario in connection herewith.

(e) To pay any cost of operating, maintaining, repairing, renewing and insuring the said works.

(f) The amounts payable in accordance with clauses 2 (b) and (c) shall be paid in twelve monthly payments, in gold coin of the present standard of weight and fineness at the office of the Commission at Toronto, and bills shall be rendered by the Commission on or before the 5th day and paid by the Corporation, on or before the 15th day of each month. If any bill remains unpaid for fifteen days, the Commission may, in addition to all other remedies and without notice, discontinue the supply of power to the Corporation until said bill is paid. No such discontinuance shall relieve the Corporation from the performance of the covenants, provisoes and conditions herein contained. All payments in arrears shall bear interest at the legal rate.

(g) To take electric power exclusively from the Commission during the continuance of this agreement.

(h) To pay for three-fourths of the power ordered from time to time by the Corporation and held in reserve for it as herein provided, whether it takes the same or not. When the greatest amount of power taken for any twenty consecutive minutes during any month shall exceed during the twenty consecutive minutes three-fourths of the amount ordered by the Corporation and held in reserve, then the Corporation shall pay for this greater amount during the entire month.

If the Corporation during any month takes more than the amount of power ordered and held in reserve for it for twenty consecutive minutes, the Corporation shall pay for this greater amount of power during the entire month. The taking of such excess shall thereafter constitute an obligation on the part of the Corporation to pay for and on the part of the Commission to hold in reserve an additional block of power in accordance with the terms and conditions of this contract.

When the power factor of the greatest amount of power taken for said twenty consecutive minutes falls below 90 per cent. the Corporation shall pay for 90 per cent. of said power divided by the power factor.

(i) To use at all times first class, modern, standard commercial apparatus and plant to be approved by the Commission.

(j) To exercise all due skill and diligence as to secure the most perfect operation of the plant and apparatus of the Commission and the Corporation.

3. This agreement shall remain in force for thirty years from the date thereof.

4. (a) The power so taken shall be measured at the 12,000 or 24,000 volt side of the step-down transformers in the sub-station in the Corporation by graphic recording curve drawing meters, subject to test as to accuracy by either party hereto.

(b) The maintenance by the Commission of approximately the agreed voltage at approximately the agreed frequency at the sub-station in the limits of the Corporation shall constitute the supply of all power involved herein and the fulfillment of all operating obligations hereunder; and when voltage and frequency are so maintained, the amount of the power, its fluctuations, load factor, power factor, distribution as to phases, and all other electric characteristics and qualities are under the sole control of the Corporation, their agents, customers, apparatus, appliances and circuits.

5. The engineers of the Commission or one or more of them, or any other person or persons appointed for this purpose by the Commission, shall have the right from time to time during the continuance of this agreement to inspect the apparatus, plant and property of the Corporation and take records at all reasonable hours.

6. In case the Commission should at any time or times be prevented from supplying said power, or any part thereof, or in case the Corporation shall at any time be prevented from taking said power, or any part thereof, by strike, lock-out, fire, invasion, explosion, act of God, or the King's enemies, or any other cause reasonably beyond their control, then the Commission shall not be bound to deliver such power during such times, and the Corporation shall not be bound to pay the price of said power during such time, but as soon as the cause of such interruption is removed, the Commission shall without any delay supply said power as aforesaid, and the Corporation shall take the same and shall be prompt and diligent in removing and overcoming such cause or causes of interruption.

7. If, and so often as, any interruption shall occur in the service of the Company due to any cause or causes, other than those provided for by the next preceding paragraph hereof, the Commission shall recover and pay to the Corporation as liquidated and ascertained damages and not by way of penalty, as follows:—

For any interruption less than one hour double the amount payable for power which should have been supplied during the time of such interruption; and for any interruption of one hour or more, the amount payable for the power which should have been supplied during the time of such interruption and twelve times the last mentioned amount in addition thereto, and all moneys payable under this paragraph when the amount thereof is settled between the Commission and the Company, may be deducted from any moneys payable by the Corporation to the Commission, but such right of deduction shall not in any case delay the said monthly payments.

8. The Commission shall at least annually adjust and apportion the amounts payable by municipal corporations for such power and such interest, sinking fund, line loss, and cost of operating, maintaining, repairing, renewing and insuring the line and works.

9. If at any time any other municipal corporation, or pursuant to said Act, any railway or distributing company, or any other corporation or person, applies to the Commission for a supply of power, the Commission shall notify the applicant and the Corporation in writing, of a time and place and hour and hear all representations that may be made as to the terms and conditions for such supply.

Without discrimination in favor of the applicants as to the price to be paid, for equal quantities of power, the Commission may supply power upon such terms and conditions as may, having regard to the risk and expense incurred, and paid, and to be paid by the Corporation, appear equitable to the Commission, and are approved by the Lieutenant-Governor in Council.

No such application shall be granted if the said line is not adequate for such supply, or if the supply of the Corporation will be thereby injuriously affected, and no power shall be supplied within the limits of a municipal corporation taking power from the Commission at the time of such application without the written consent of such Corporation.

In determining the quantity of power supplied to a municipal corporation, the quantity supplied by the Commission within the limits of the Corporation to any applicant, other than a municipal corporation, shall be computed as part of the quantity supplied to such Corporation, but such Corporation shall not be liable to pay for the power so supplied, or otherwise in respect thereof. In order to prevent discrimination by the municipal corporation, no power shall be supplied by the municipal corporation to any railway or distributing company without the written consent of the Commission, but the Corporation may sell power to any person or persons or manufacturing companies inside the limits of the corporation, but such power shall not be sold for less than the cost and without discrimination as regards price and quantity.

10. In case any municipal corporation, or any person, firm or corporation which shall contract with the Commission or with any municipal corporation for a supply of power furnished to the Commission by the Power Company shall suffer damages by the act or neglect of the Power Company, and such municipal corporation, person, firm or corporation would, if the Power Company had made the said contracts directly with them, have had a right to recover such damages or commence any proceedings or any other remedy, the Commission shall be entitled to commence any such proceedings to bring such action for or on behalf of such municipal corporation, person, firm or corporation, and notwithstanding any acts, decision or rule of law to the contrary, the Commission shall be entitled to all the rights and remedies of such municipal corporation, person, firm or corporation, including the right to recover such damages, but no action shall be brought by the Commission until such municipal corporation, person, firm or corporation shall have agreed with the Commission to pay any costs that may be adjudged to be paid if such proceedings or action is unsuccessful. The rights and remedies of any such municipal corporation, person, firm or corporation shall not be hereby prejudiced.

11. It is hereby declared that the Commission is to be a trustee of all property held by the Commission under this agreement for the Corporations and other municipal Corporations supplied by the Commission, but the Commission shall be entitled to a lien upon said property for all moneys expended by the Commission under this agreement and not repaid. At the expiration of this agreement the Commission shall determine and adjust the rights of the corporations and other municipal corporations, supplied by the Commission, having regard to the amounts paid by them, respectively, under the terms of this agreement, and such other considerations as may appear equitable to the Commission and are approved by the Lieutenant-Governor-in-Council.

12. Each of the corporations agrees with the other:—

(a) To take electric power exclusively from the Commission during the continuance of this agreement, subject to the provisoes above set forth in paragraph 2 (b).

(b) To co-operate by all means in its power, at all times, with the Commission, to increase the quantity of power required from the Commission, and in all other respects to carry out the objects of this agreement and of the said Act.

13. If differences arise between corporations to whom the Commission is supplying power, the Commission may upon application fix a time and place to hear all representations that may be made by the parties, and the Commission shall, in a summary manner when possible, adjust such differences and such adjustment shall be final. The Commission shall have all the powers that may be conferred upon a Commissioner appointed under *The Act respecting Enquiries Concerning Public Matters*.

14. If such differences arise between the Corporation and the Commission, the Lieutenant-Governor-in-Council may, upon application, fix a time and place to hear all representations that may be made by the parties, and the Lieutenant-Governor-in-Council shall, in a summary manner, when possible, adjust such differences and such adjustment shall be final. The Lieutenant-Governor-in-Council shall have all the powers that may be conferred upon a Commission appointed under *The Act respecting Enquiries Concerning Public Matters*.

15. This agreement shall extend to, be binding upon and enure to the benefit of the successors and assigns of the parties hereto.

In witness whereof the Commission and the Corporation have respectively affixed their corporate seals and the hands of their proper officers.

HYDRO-ELECTRIC POWER COMMISSION OF ONTARIO.

(Seal.)

Witness:

C. T. McBRIDE,

Asst. City Clerk,

As to the execution of the
City of St. Catharines.

A. BECK, *Chairman.*

W. W. POPE, *Secretary.*

W. H. MURRELL, *Mayor.*

J. A. PAY, *City Clerk.*

(Seal.)

SCHEDULE "C."

This indenture made in duplicate the 2nd day of April, in the year of Our Lord, One Thousand Nine Hundred and Thirteen.

Between:

The Hydro-Electric Power Commission of Ontario, hereinafter called the "Commission," party of the first part,

and

The Municipal Corporation of the Police Village of Brechin, hereinafter called the "Corporation," party of the second part.

Whereas pursuant to "An Act to provide for transmission of electrical power to Municipalities known as the Power Commission Act and amendments thereto," the Corporation applied to the Commission for a supply of power, and the Commission furnished the Corporation with estimates of the total cost of such power, ready for distribution within the limits of the Corporation (and the electors of the Corporation assented to by-law authorizing the Corporation to enter into a contract with the Commission for such power).

1. Now therefore this indenture witnesseth that in consideration of the premises and of the agreement of the Corporation herein set forth subject to the provisions of the said Act and amendments thereto, the Commission agrees with the Corporation.

(a) To reserve and deliver at the earliest possible date 50 h.p. or more of electrical energy and power to the Corporation.

(b) At the expiration of reasonable notice in writing which may be given by the Corporation from time to time during the continuance of this agreement, to reserve and deliver to the Corporation additional electric energy and power when called for.

(c) To use at all times first-class, modern, standard commercial apparatus and plant, and to exercise all due skill and diligence so as to secure satisfactory operation of the plant and apparatus of the Corporation.

(d) The power shall be delivered to the Corporation at a voltage suitable for distribution and at a frequency of approximately 60 cycles per second.

2. In consideration of the premises and of the agreements herein set forth, the Corporation agrees with the Commission:—

(a) To use all diligence by every lawful means in its power to prepare for the receipt and use of the power dealt with by this agreement so as to be able to receive power when the Commission is ready to deliver same.

(b) To pay annually, interest at 4 per cent. per annum upon the Corporation's proportionate part (based on the quantity of electrical energy or power taken), of all moneys expended by the Commission on capital account for the acquiring of properties and rights, the acquiring and construction

of generating plants, transformer stations, transmission lines, distributing stations, and other works necessary for the delivery of said electrical energy or power to the Corporation under the terms of this contract.

Also to pay an annual sinking fund instalment of such amount as to form at the end of 30 years, with accrued interest, a sinking fund sufficient to repay the Corporation's proportionate part, based as aforesaid, of all moneys advanced by the Province of Ontario, for the acquiring of properties and rights, the acquiring and construction of generating plants, transformer stations, transmission lines, distributing stations and other work necessary for the delivery of said electrical energy or power delivered to the Corporation under the terms of this contract.

Also to pay the Corporation's proportionate part, based as aforesaid, of the cost of lost power, operating, maintaining, repairing, renewing and insuring said generating plants, transformer stations, transmission lines, distributing stations and other necessary works.

Also to pay a proportionate part, based as aforesaid, of any administration and rentals which may be necessary.

(c) The amounts payable under this contract shall be paid in twelve monthly payments, in gold coin of the present standard of weight and fineness, at the office of the Commission at Toronto, and bills shall be rendered by the Commission on or before the 5th day and paid by the Corporation on or before the 15th day of each month. If any bill remain unpaid for fifteen days, the Commission may, in addition to all other remedies and without notice, discontinue the supply of power to the Corporation until said bill is paid. No such discontinuance shall relieve the Corporation from the performance of the covenants, provisoes and conditions herein contained. All payments in arrears shall bear interest at the legal rate.

(d) To take electric power exclusively from the Commission during the continuance of this agreement.

(e) To co-operate by all means in its power at all times with the Commission to increase the quantity of power required from the Commission, and in all other respects to carry out the objects of this agreement, and of the said Act.

(f) To pay for three-fourths of the power ordered from time to time by the Corporation and held in reserve for it as herein provided whether it takes the same or not. When the greatest amount of power taken for any twenty consecutive minutes during any month shall exceed the twenty consecutive minutes three-fourths of the amount ordered by the Corporation and held in reserve, then the Corporation shall pay for this greater amount during the entire month.

(g) If the Corporation during any month takes more than the amount of power ordered and held in reserve for twenty consecutive minutes, the taking of such excess shall thereafter constitute an obligation on the part of the Corporation to pay for and on the part of the Commission to hold in reserve an additional block of power in accordance with the terms and conditions of this contract.

(h) When the power factor of the greatest amount of power taken for said twenty consecutive minutes falls below 90 per cent. the Corporation shall pay for 90 per cent. of said power divided by the power factor.

(i) To use at all times first-class, modern, standard, commercial apparatus and plant, approved by the Commission.

(j) To exercise all due skill and diligence so as to secure satisfactory operation of the plant and apparatus of the Commission and the Corporation.

3. This agreement shall remain in force for thirty years from date of the first delivery of power under this contract.

4. The power shall be at a voltage suitable for local distribution, 60 cycle, 3 phase, alternating commercially continuous twenty-four-hour power every day in the year, and shall be delivered by the Commission to the Corporation at the distribution bus bars in the Corporation's distribution station within the Corporation limits.

(a) That the meters with their series and potential transformers shall be connected at the point of delivery.

(b) The maintenance by the Commission of approximately the agreed voltage at approximately the agreed frequency at the sub-station in the limits of the Corporation shall constitute the supply of all power involved herein and the fulfillment of all operating obligations hereunder, and when voltage and frequency are so maintained, the amount of the power, its fluctuations, load factor, power factor, distribution as to phases and all other electric characteristics and qualities are under the sole control of the Corporation, their agents, customers, apparatus, appliances, and circuits.

5. The engineers of the Commission, or one or more of them, or any other person or persons appointed for this purpose by the Commission, shall have the right from time to time during the continuance of this agreement to inspect the apparatus, plant and property of the Corporation and take records at all reasonable hours.

6. The Commission shall at least annually adjust and apportion the amount or amounts payable by the Municipal Corporation or Corporations for such power and such interest, sinking fund, lost power, cost of generating, operating, maintaining, repairing, renewing and insuring said works.

7. If at any time any other Municipal Corporation or pursuant to said Act, any railway or distributing company or any other corporation or person, applies to the Commission for a supply of power, the Commission shall notify the applicant and the Corporation in writing, of such a time and place and hear all representations that may be made as to the terms and conditions for such supply.

Without discrimination in favour of the applicants as to the price to be paid, for equal quantity of power, the Commission may supply power upon such terms and conditions as may, having regard to the risk and expense incurred and paid, and to be paid, by the Corporation, appear equitable to the Commission, and are approved by the Lieutenant-Governor in Council.

No such application shall be granted if the said line is not adequate for such a supply, or if the supply of the Corporation will be thereby injuriously affected, and no power shall be supplied within the limits of a Municipal Corporation taking power from the Commission at the time of such application without the written consent of the Corporation.

In determining the quantity of power supplied to a Municipal Corporation, the quantity supplied by the Commission within the limits of the Corporation to any applicant, other than a Municipal Corporation, shall be computed as part of the quantity supplied to such Corporation, but such Corporation shall not be liable to pay for the power so supplied, or otherwise in respect thereof no power shall be supplied by the Municipal Corporation to any railway or distributing company without the written consent of the Commission. Power shall not be sold for less than the cost and without discrimination as regards price and quantity.

8. It is hereby declared that the Commission is to be a trustee of all property held by the Commission under this agreement for the Corporation or Corporations supplied by the Commission, but the Commission shall be entitled to a lien upon said property for all moneys expended by the Commission under this agreement and not repaid. At the expiration of this agreement the Commission shall determine and adjust the rights of the Corporation and any other Corporations (if any) supplied by the Commission, having regard to the amounts paid by them respectively under the terms of this agreement, and such other considerations as may appear equitable to the Commission and are approved by the Lieutenant-Governor in Council.

9. If differences arise between the Corporations to whom the Commission is supplying power, the Commission may upon application fix a time and place and hear all representations that may be made by the parties, and the Commission shall, in a summary manner, when possible, adjust such differences and such adjustment shall be final. The Commission shall have all the power that may be conferred upon a Commissioner appointed under *The Act Respecting Enquiries Concerning Public Matters*.

10. This agreement shall extend to, and be binding upon and enure to the benefit of the successors and assigns of the parties hereto.

In witness whereof the Commission and the Corporation have respectively affixed their corporate seals and the hands of their proper officers.

POLICE VILLAGE OF BRECHIN.

W. J. FRENCH,	}	<i>Trustees.</i>
P. J. KEHOR,		
J. D. BRADY,		

HYDRO ELECTRIC POWER COMMISSION OF ONTARIO.

W. W. POPE,
Secretary.

A. BECK,
Chairman.

SCHEDULE "D."

This indenture made in duplicate the twelfth day of February in the year of our Lord one thousand nine hundred and fourteen,

Between

The Hydro-Electric Power Commission of Ontario, hereinafter called the "Commission," party of the first part,

and

The Municipal Corporation of the Village of Creemore, hereinafter called the "Corporation," party of the second part.

Whereas, pursuant to *An Act to Provide for Transmission of Electrical Power to Municipalities*, the Corporation applied to the Commission for a supply of power, and the Commission have entered into a contract with the Simcoe Railway & Power Co., and the electors of the Corporation assented to a by-law authorizing the Corporation to enter into a contract with the Commission for such power.

1. Now, therefore, this indenture witnesseth, that in consideration of the premises and of the agreements of the Corporation herein set forth, subject to the provisions of said Act and of the said contract, the Commission agrees with the Corporation:—

(a) To reserve and deliver at the earliest possible date 75 h.p. or more of electric power to the Corporation.

(b) At the expiration of thirty days' notice in writing, which may be given by the Corporation from time to time, during the continuance of this agreement, to reserve and deliver to the Corporation additional electric power when called for in blocks or 25 h.p. each, up to the limit of the capacity of the Power Company.

(c) To use at all times first-class, modern, standard commercial apparatus and plant, and to exercise all due skill and diligence so as to secure satisfactory operation of the plant and apparatus of the Corporation.

(d) The power shall be delivered to the Corporation at approximately 2,200 volts and at approximately 60 cycles per second.

2. In consideration of the premises and of the agreements herein set forth, the Corporation agrees with the Commission:—

(a) To use all diligence by every lawful means in its power to prepare for the receipt and use of the power dealt with by this agreement so as to be able to receive power when the Commission is ready to deliver same.

(b) Subject to the provisions of paragraph 2 (f) hereof, to pay the Commission the following prices: \$20.00 per h.p. per annum for all power taken until the demands of the Commission on the Power Company shall equal or exceed 500 h.p.

When the demand of the Commission on the Power Company shall have increased to 500 h.p. to pay \$19.00 per h.p. per annum for all or any proportion thereof taken by the Corporation.

When the demand of the Commission on the Power Company shall have increased to 1,000 h.p. to pay \$18.00 per h.p. per annum for all or any proportion thereof taken by the Corporation.

When the demand of the Commission on the Power Company shall have increased to 1,500 h.p. to pay \$16.50 per h.p. per annum for all or any proportion thereof taken by the Corporation.

Nothing herein contained shall bind the Commission to supply power on the demand of the Corporation after the demand of the Commission on the Power Company exceeds 1,500 h.p., unless the Power Company has power available or capable of development.

(c) To pay in addition annually, interest at 4 per cent. per annum upon moneys expended by the Commission on capital account for the construction of the transmission line, the transformer station equipment, and the other necessary works required for the delivery of power and transforming it from 22,000 to 2,200 volts.

Also to pay an annual part of the cost of the construction of said line, station and works so as to form in 30 years a sinking fund for the repayment of the moneys advanced by the Province of Ontario, in connection with this work.

Also to pay the cost of operating, maintaining, repairing, renewing and insuring the said line, station and works.

(d) The amounts payable under this contract shall be paid in twelve monthly payments, in gold coin of the present standard of weight and fineness, at the office of the Commission at Toronto, and bill shall be rendered by the Commission on or before the 5th day and paid by the Corporation on or before the 15th day of each month. If any bill remains unpaid for fifteen days, the Commission may, in addition to all other remedies and without notice, discontinue the supply of power to the Corporation until said bill is paid. No such discontinuance shall relieve the Corporation from the performance of the covenants, provisoes and conditions herein contained. All payments in arrears shall bear interest at the legal rate.

(e) To take electric power exclusively from the Commission during the continuance of this agreement.

(f) To pay for three-fourths of the power ordered from time to time by the Corporation and held in reserve for it as herein provided whether it takes the same or not. When the greatest amount of power taken for any twenty consecutive minutes during any month shall exceed during the twenty consecutive minutes three-fourths of the amount ordered by the Corporation and held in reserve, then the Corporation shall pay for this greater amount during the entire month.

If the Corporation during any month takes more than the amount of power ordered and held in reserve for it for twenty consecutive minutes, the taking of such excess shall therefore constitute an obligation on the part of the Corporation to pay for, and on the part of the Commission to hold in reserve an additional block of power in accordance with the terms and conditions of this contract.

When the power factor of the greatest amount of power taken for said twenty consecutive minutes falls below 90 per cent. the Corporation shall pay for 90 per cent. of said power divided by the power factor.

(g) To use at all times first-class, modern, standard commercial apparatus and plant, approved by the Commission.

(h) To exercise all due skill and diligence so as to secure satisfactory operation of the plant and apparatus of the Commission and the Corporation.

(i) To co-operate, by all means in its power, at all times, with the Commission, to increase the quantity of power required from the Commission, and in all other respects to carry out the objects of this agreement and of the said Act.

3. This agreement shall remain in force for ten years from the date of the first delivery of power under this contract. The Corporation may, at its option, continue this agreement for one or two further consecutive terms, the first of these two additional terms being of five years' duration, and the second of such length that the expiry thereof shall fall on the 10th day of September, 1929.

(a) Provided, however, that in the event of the Commission being in a position to furnish power either by a further agreement with the Simcoe Railway & Power Company or otherwise, the Corporation may, at its option, continue this agreement for a further term of twelve years' duration.

(b) The Corporation may exercise the first of these options by giving notice in writing of its intention to continue this agreement for the second term of five years at least two years before the expiration of the first term of ten years.

(c) The Corporation may exercise the second of these options by giving notice to the Commission in writing of its intention to continue this agreement for the third term until the expiry days of September 10th, 1929, at least two years before the expiration of the second term of five years.

(d) The Corporation may, subject to the conditions set out in paragraph 3 (a) exercise the further option therein mentioned by giving the Commission notice in writing of its intention to continue this agreement for the further term of twelve years at least two years before the expiration of the terms falling on the 10th day of September, 1929.

4. The power shall be approximately 2,200 volts, 60 cycles, 3 phase, alternating commercially continuous twenty-four hour power every day in the year except as provided herein, and shall be delivered and measured by the Commission to the Corporation at the 2,200 volt terminals of the step-down transformers in the sub-station at present located in the Municipality of Stayner and serving the district in which the Corporation is located.

(a) That the meters with their series or potential transformers may be connected to the high-tension side or low-tension side of the transformers, or some connected to one side and some connected to the other,

as the Commission may elect. That whenever connected at other than the point of measurement their readings shall be subject to a correction and shall be corrected to give a reading such as would be obtained by instruments as if connected at the point of measurement. That such corrections shall be based upon tests made upon the step-down transformers and transmission lines by the Commission, or any other tests upon them acceptable to the Commission as to the efficiency, regulation, or any other constants of the transformers and the transmission lines necessary for said correction, but that such tests, when made by the Commission, are to be made in the presence of the representatives or representative of the customer if it so desires.

(b) The maintenance by the Commission of approximately the agreed voltage at approximately the agreed frequency at the sub-station serving the district in which the Corporation is located, shall constitute the supply of all power involved herein, and the fulfilment of all operating obligations hereunder; and when voltage and frequency are so maintained, the amount of power, its fluctuations, load factor, power factor, distribution as to phases, and all other electric characteristics and qualities are under the sole control of the Corporation, their agents, customers, apparatus, appliances and circuits.

5. The engineers of the Commission, or one or more of them, or any other person or persons appointed for this purpose by the Commission, shall have the right from time to time during the continuance of this agreement to inspect the apparatus, plant and property of the Corporation and take records at all reasonable hours.

6. In case the Commission should at any time or times be prevented from supplying said power, or any part thereof, or in case the Corporation shall at any time be prevented from taking said power, or any part thereof, by strikes, lock-out, fire, invasion, explosion, act of God, or the King's enemies, or any other cause reasonably beyond their control, then the Commission shall not be bound to deliver such power during such times, and the Corporation shall not be bound to pay the price of said power during such time, but as soon as the cause of such interruption is removed, the Commission shall without any delay supply said power as aforesaid, and the Corporation shall take the same and shall be prompt and diligent in removing and overcoming such cause or causes of interruption.

7. If, and so often as, any interruption shall occur in the service of the Power Company, due to any cause or causes other than those provided for by the next preceding paragraph herein, the Commission shall recover and pay to the Corporation as liquidated and ascertained damages, and not by way of penalty, as follows:—

For any interruption of less than one hour double the amount payable for power which should have been supplied during the time of such interruption; and for any interruption of one hour or more the amount payable for the power which should have been delivered during the time of such interruption, and six times the last mentioned amount in addition thereto, and all moneys payable under this paragraph, when the amount thereof is settled between the Commission and the Company, may be deducted from any money payable by the Corporation to the Commission, but such right of deduction shall not in any case delay the said monthly payments.

8. If at any time any other Municipal Corporation, or pursuant to said Act, any railway or distributing company, or any other corporation or person, applies to the Commission for a supply of power, the Commission shall notify the applicant and the Corporation, in writing, of a time and place to hear all representations that may be made as to the terms and conditions of such supply.

Without discrimination in favor of the applicants as to the price to be paid, for equal quantity of power, the Commission may supply power upon such terms and conditions as may, having regard to the risk and expenses incurred, and paid, and to be paid by the Corporation, appear equitable to the Commission, and are approved by the Lieutenant-Governor in Council.

No such application shall be granted if the said line is not adequate for such supply, or if the supply of the Corporation will be thereby injuriously affected, and no power shall be supplied within the limits of a Municipal Corporation taking power from the Commission at the time of such application without the written consent of such Corporation.

In determining the quantity of power supplied to a Municipal Corporation, the quantity supplied by the Commission within the limits of the Corporation to any applicant, other than a municipal corporation, shall be computed as part of the quantity supplied to such corporation, but such corporation shall not be liable to pay for the power so supplied, or otherwise in respect thereof. In order to prevent discrimination by the municipal corporation, no power shall be supplied by the municipal corporation to any railway or distributing company without the written consent of the Commission, but the Corporation may sell power to any person or persons or manufacturing companies inside the limits of the Corporation, but such power shall not be sold for less than the cost and without discrimination as regards price and quantity.

9. In case any municipal corporation, or any person, firm or corporation which shall contract with the Commission or with any municipal corporation for a supply of power furnished to the Commission by the Power Company shall suffer damages by the act or neglect of the Power Company, and such municipal corporation, person, firm or corporation would, if the Power Company had made the said contracts directly with them, have had a right to recover such damages or commence any proceedings or any other remedy, the Commission shall be entitled to commence any such proceedings or bring such action for or on behalf of such municipal corporation, person, firm or corporation, and notwithstanding any acts, decision or rule of law to the contrary, the Commission shall be entitled to all the rights and remedies of such municipal corporation, person, firm or corporation, including the right to recover such damages, but no action shall be brought by the Commission until such municipal corporation, person, firm or corporation shall have agreed with the Commission to pay any costs that may be adjudged to be paid if such proceedings or action is unsuccessful. The rights and remedies of any such municipal corporation, person, firm or corporation shall not be hereby prejudiced.

10. It is hereby declared that the Commission is to be a trustee of all property held by the Commission under this agreement for the Corporation and other municipal corporations supplied by the Commission, but the

Commission shall be entitled to a lien upon said property for all moneys expended by the Commission under this agreement and not repaid. At the expiration of this agreement the Commission shall determine and adjust the rights of the Corporations and other municipal corporations, supplied by the Commission, having regard to the amounts paid by them respectively, under the terms of this agreement, and such other considerations as may appear equitable to the Commission and are approved by the Lieutenant-Governor in Council.

11. If differences arise between corporations to whom the Commission is supplying power, the Commission may upon application fix a time and place to hear all representations that may be made by the parties, and the Commission shall, in a summary manner, when possible, adjust such differences, and such adjustment shall be final. The Commission shall have all the powers that may be conferred upon a Commissioner appointed under the *Act respecting Enquiries Concerning Public Matters*.

12. If differences arise between the Corporation and the Commission, the Lieutenant-Governor in Council may, upon application, fix a time and place to hear all representations that may be made by the parties, and the Lieutenant-Governor in Council shall, in a summary manner, when possible, adjust such differences, and such adjustment shall be final. The Lieutenant-Governor in Council shall have all the powers that may be conferred upon a Commissioner appointed under the *Act respecting Enquiries Concerning Public Matters*.

13. This agreement shall extend to, be binding upon, and enure to the benefit of the successors and assigns of the parties hereto.

In witness whereof the Commission and Corporation have respectively affixed their corporate seals and the hands of their proper officers.

HYDRO-ELECTRIC POWER COMMISSION OF ONTARIO.

A. BECK,

Chairman.

W. W. POPE,

Secretary.

(SEAL.)

THE MUNICIPAL CORPORATION OF THE VILLAGE OF
CREEMORE.

G. COPLAND,

Reeve.

A. H. WALSON,

Clerk.

(SEAL.)

SCHEDULE "E."

This indenture made this first day of November, A.D. 1914,

Between

The Hydro-Electric Power Commission of Ontario, acting herein on its own behalf and with the approval of the Lieutenant-Governor in Council (hereinafter called the Commission), party of the first part,

and

The Municipal Corporation of the Police Village of Williamsburg, (hereinafter called the Corporation), party of the second part.

Whereas pursuant to "An Act to provide for transmission of electrical power to Municipalities," and the amendments thereto, the Corporation applied to the Commission to transmit and supply such power, and the Commission has entered into contracts with a company or companies for the supply of such power at the prices set forth in the schedule hereto attached, and the Commission has furnished the Corporation with estimates, as shown in the schedule of the total cost of such power, and the electors of the Corporation assented to by-laws authorizing the Corporation to enter into a contract with the Commission for such power, and the Commission have estimated the line loss and the cost to construct, operate, maintain, repair, renew and insure a line to transmit such power to the Corporation, and have apportioned the part of such cost to be paid by each corporation as shown in said schedule.

Now therefore this indenture witnesseth that in consideration of the premises and of the agreements of the Corporation herein set forth, subject to the provisions of said Act and the amendments thereto, and of the said contracts subject to any variations thereof by the Corporation, the Commission agrees with the Corporation respectively:—

1. (a) To construct a line to transmit the quantities of electric power, shown in column 2 of the said schedule, to the Corporation shown in column 1 respectively.

(b) On the 15th day of May, 1915, or on any earlier day on which the Commission shall be prepared to supply said power in quantities set forth in column 2 of the said schedule to the Corporation within the limits thereof, ready for distribution at approximately the number of volts set forth in column 4 of said schedule, and approximately 60 cycles per second frequency.

(c) At the expiration of three months' written notice, which may be given by the Corporation from time to time during the continuance of this agreement, to supply from time to time to the Corporation in blocks of not less than 10 horse power each, additional power until the total amount so supplied shall amount to 15,000 horse power, or such further amount as the Commission may be able and willing to supply.

(d) To use at all times first-class, modern, standard, commercial apparatus and plant and to exercise all due skill and diligence so as to secure the most perfect operation of the plant and apparatus of the Corporation.

In consideration of the premises and of the agreements herein set forth each of the Corporations, for itself, and not one for the other, agrees with the Commission:—

2. (a) Subject to the provisions of paragraph 2 (g) hereof, to pay to the Commission for the quantities of power shown in column 2 of said schedule to be supplied as aforesaid from the date when the Commission notifies the Corporation that it is ready to supply such power, and for all additional power held in reserve upon any of the above mentioned notices from the respective dates thereof until the termination of this Agreement, the price set forth in column 3 of said schedule in twelve monthly payments, in gold coin of the present standard of weight and fineness, and bills shall be rendered by the Commission on or before the fourth day and paid by the Corporation on or before the fifteenth day of each month. If any bill remains unpaid for fifteen days, the Commission may, in addition to all other remedies and without notice, discontinue the supply of such power to the Corporation in default until said bill is paid. No such discontinuance shall relieve the Corporation in default from the performance of the covenants, provisoes, and conditions herein contained. All payments in arrears shall bear interest at the legal rate.

(b) To take electric power exclusively from the Commission during the continuance of this agreement; provided, if the Commission is unable to supply said power as quickly as required, the Corporation may obtain the supply otherwise until the Commission has provided such supply, thereupon the Corporation shall immediately take from the Commission; and the Corporation may generate, store or accumulate electric power for emergencies, or to keep down the peak load of the power taken from the Commission; and nothing herein contained shall affect existing contracts between the Corporation and other parties for a supply of electric power, but the Corporation shall determine said contracts at the earliest possible date.

(c) To pay, annually, interest at four per cent. per annum upon its proportionate part of the moneys expended by the Commission on capital account for the construction of the said line, transformer stations and other necessary works, shown, respectively, in column 6 of said schedule, subject to adjustment under paragraph 9.

(d) To pay an annual sum for its proportionate part of the cost of the construction of said line, stations and works, shown, respectively, in column 6 of said schedule, subject to adjustment under paragraph 9, so as to form in thirty years a sinking fund for the retirement of the securities to be issued by the Province of Ontario.

(e) To bear its proportionate part of the line loss and pay its proportionate part of the cost to operate, maintain, repair, renew and insure the said line, stations and works, shown, respectively, in column 7 of said schedule, subject to adjustment under paragraph 9.

(f) To keep, observe and perform the covenants, provisoes and conditions set forth in said contracts, intended by the Commission and the Company to be kept and observed and performed.

(g) To pay as a minimum for three-fourths of the power to be supplied at said date or of the power held in reserve upon any of the said notices, whether the said power is taken or not; and when the greatest amount of power taken for twenty consecutive minutes in any month shall exceed

during such twenty minutes three-fourths of the amount to be supplied and held in reserve to pay for this greater amount during that entire month; the amount payable for a month being one-twelfth part of the annual rate applicable to the horse power in question. When the power factor of the greatest amount of power taken for said twenty minutes falls below 90 per cent., the Corporation shall pay for 90 per cent. of said power divided by the power factor.

(h) To take no more power than the amount to be supplied and held in reserve at said date and upon said notices, as per paragraph 1 (c).

(i) To use at all times first-class, modern, standard, commercial apparatus and plant to be approved by the Commission.

(j) To exercise all due skill and diligence so as to secure the most perfect operation of the plant and apparatus of the Commission and the Company.

3. If, as herein provided, the said contracts are continued until nineteen hundred and forty-two (1942) this agreement shall remain in force until that date.

4. (a) Said power shall be three phase, alternating, commercial continuous twenty-four hour power every day of the year, except as provided in paragraph 6 hereof, and shall be measured by curve-drawing meters, subject to test as to accuracy by either party hereto.

(b) The maintenance by the Commission of approximately the agreed voltage at approximately the agreed frequency at the point of delivery to the Corporation shall constitute the supply and the holding in reserve of all power involved herein, and the fulfilment of all operating obligations hereunder; the amount of the power, its fluctuations, load factor, power factor, distribution as to phases, and all other electric characteristics and qualities being under the sole control of the Corporation, its agents, customers, apparatus, appliances and circuits.

5. The engineers of the Commission, or one or more of them or any other person or persons appointed for this purpose by the Commission, shall have the right from time to time during the continuance of this agreement to inspect the apparatus, plant and property of the Corporation, and take records at all reasonable times on giving to the Corporation six hours' notice of the intention to make such inspection. The Corporation shall have a like right on giving a like notice to inspect the apparatus, plant and property of the Commission.

6. In case the Commission or the Company shall at any time or times be prevented from supplying said power, or any part thereof, or in case the Corporation shall at any time be prevented from taking such power, or any part thereof, by strike, lock-out, riot, fire, invasions, explosion, act of God or the King's enemies, or any other cause reasonably beyond their control, then the Commission shall not be bound to deliver such power during such time and the Corporation shall not be bound to pay the price of said power at the point of delivery by the Company during such time, but the Corporation shall continue to make all other payment, but as soon as the cause of such interruption is removed the Commission shall without any delay supply said power as aforesaid, and the Corporation shall take the same and each of the parties hereto shall be prompt and diligent in removing and overcoming such cause or causes of interruption.

7. If, and so often as, any interruption shall occur in the service of the Company due to any cause or causes other than those provided for by the next preceding paragraph hereof, the Commission shall pay to the Corporation as liquidated and ascertained damages, and not by way of penalty, their respective proportionate shares of whatever sum is payable to the Commission by reason of such interruption; and when the amount thereof has been settled, such sum may be deducted from any moneys payable by the Corporation to the Commission, but such right of deduction shall not in any case delay the said monthly payments, nor shall the Commission be subject to any other liability for any non-delivery.

8. In case any municipal corporation, or any person, firm or corporation, which shall contract with the Commission or with any municipal corporation for a supply of power furnished to the Commission by the Company, shall suffer damages by the act or neglect of the Company, and such municipal corporation, person, firm or corporation would, if the Company had made the said contracts directly with them, have had a right to recover such damages or commence any proceedings or any other remedy, the Commission shall be entitled to commence any such proceedings or bring such action for or on behalf of such municipal corporation, person, firm or corporation, and notwithstanding any statute, decision or rule of law to the contrary, the Commission shall be entitled to all the rights and remedies of such municipal corporation, person, firm or corporation, including the right to recover such damages, but no action shall be brought by the Commission until such municipal corporation, person, firm or corporation shall have agreed with the Commission to pay any costs that may be adjudged to be paid if such proceedings or action is unsuccessful. The rights and remedies of any such municipal corporation, person, firm or corporation shall not be hereby prejudiced.

9. The Commission shall at least annually adjust and apportion the amounts payable by municipal corporations for such power and such interest, sinking fund, line loss, and cost of operating, maintaining, repairing, renewing, and insuring the line and works.

10. (a) If at any time any other municipal corporation, or, pursuant to said Act, any railway or distributing company or any other corporation or person, applies to the Commission for a supply of power, the Commission shall notify the applicant and the corporation, party hereto, in writing, of a time and place and hear all representations that may be made as to the terms and conditions for such supply.

(b) Without discrimination in favor of the applicants as to the price to be paid, for equal quantities of power, the Commission may supply power upon such terms and conditions as may, having regard to the risk and expense incurred, and paid, and to be paid by the Corporation, party hereto, appear equitable to the Commission, and are approved by the Lieutenant-Governor in Council.

(c) No such application shall be granted if the said line is not adequate for such supply, or if the supply of the Corporation, party hereto, will be thereby injuriously affected, and no power shall be supplied within the limits of a municipal corporation taking power from the Commission at the time of such application, without the written consent of such corporation.

(d) In determining the quantity of power supplied to a municipal corporation, the quantity supplied by the Commission within the limits of the Corporation to any applicant, other than a municipal corporation, shall be computed as part of the quantity supplied to such corporation, but such corporation shall not be liable to pay for the power so supplied, by any municipal corporation, to any railway or distributing company, without the written consent of the Commission.

11. It is hereby declared that the Commission is to be a trustee of all property held by the Commission under this agreement, for the corporation and other municipal corporations supplied by the Commission, but the Commission shall be entitled to a lien upon said property for all moneys expended by the Commission under this agreement and not repaid. At the expiration of this agreement, the Commission shall determine and adjust the rights of the Corporation and other municipal corporations, supplied by the Commission, having regard to the amounts paid by them, respectively, under the terms of this agreement, and such other considerations as may appear equitable to the Commission and are approved by the Lieutenant-Governor in Council.

12. Each of the Corporations agrees with the other:—

(a) To take electric power exclusively from the Commission during the continuance of this agreement, subject to the provisoes above set forth in paragraph 2 (b).

(b) To co-operate, by all means in its power, at all times, with the Commission, to increase the quantity of power required from the Commission, and in all other respects to carry out the objects of this agreement and of the said Act.

13. If differences arise between the Corporations the Commission may upon application fix a time and place to hear all representations that may be made by the parties and the Commission shall, in a summary manner, when possible, adjust such differences, and such adjustment shall be final. The Commission shall have all the powers that may be conferred upon a Commissioner appointed under the Act respecting Enquiries concerning Public Matters.

14. This agreement shall extend to, be binding upon, and enure to the benefit of the successors and assigns of the parties hereto.

In witness whereof the Corporation and the Commission have respectively affixed their corporate seals and the hands of their proper officers.

THE HYDRO-ELECTRIC POWER COMMISSION OF ONTARIO.

A. BECK, *Chairman*.

(Seal)

W. W. POPE, *Secretary*.

POLICE VILLAGE OF WILLIAMSBURG.

OLLIVER BECKER, *Secretary*.

P. E. BECKSTEAD, *Chairman*.

E. C. MURKLEY, *Inspecting Trustee*.

(Seal)

Column 1	2	3	4	5	6	7
Name of Municipal Corporation.	Quantity of Power applied for in H.P.	Cost of Power at Point of delivery to Commission.	No. of Volts.	Estimate Maximum cost of power ready for distribution in municipality.	Estimate proportionate part of cost to construct transmission line, transformer station and works for nominally....h.p. with total capacity of....	Estimate proportionate part of line loss and of part cost of to operate, maintain, repair, re-new and insure transmission line, transformer station works for nominally....h.p. with capacity of....h.p.
Brockville	1,000	\$14.00 for not less than 2,000 h.p.	13,000	\$24 04	\$76,950	\$7,077
Prescott	300	Then for all power taken up to 4,000 h.p., \$13.40 per h.p.	13,200	24 54	30,594	1,838
Chesterville	50	Then for all power taken up to 6,000 h.p., 12.50 per h.p.	4,400	35 00	10,224	487
Winchester	100	Then for all power taken up to 8,000 h.p., 12.00 per h.p.	4,400	24 00	7,280	638
Williamsburg	20	Then for all power taken up to 10,000 h.p., 11.50 per h.p.	4,000	34 66	3,522	272
		Then for all power taken up to 10,000 h.p. or over, \$11.00 per h.p.		(Without Sinking Fund.)		

SCHEDULE "F."

This Indenture, made in duplicate this 12th day of May, in the year of our Lord A.D. 1914,

Between

The Hydro-Electric Power Commission of Ontario, hereinafter called the "Commission," party of the first part,

and

The Municipal Corporation of the Township of Grantham, herein called the "Corporation," party of the second part.

Whereas, pursuant to an Act to provide for the transmission of electrical power to municipalities, the Corporation applied to the Commission for a supply of power;

And whereas the Corporation under the provisions of *The Power Commission Act* and amendments thereto, the Power Commission Act of 1911, being *An Act to Provide for the Local Distribution of Electrical Power*, has, at the request of a number of ratepayers (petitioners) applied to the Commission for a supply of electrical power and energy, and has passed a by-law, No. 262, to authorize the execution of an agreement therefor;

1. Now therefore this indenture witnesseth that in consideration of the premises and of the agreements of the Corporation set forth, subject to the provisions of said Act and amendments and of the said contract, the Commission agrees with the Corporation:—

(a) To reserve and deliver at earliest possible date 100 h.p. of electrical power to the Corporation.

(b) At the expiration of thirty (30) days' notice in which which may be given by the Corporation from time to time during the continuance of this agreement, to reserve and deliver to the Corporation additional electrical power as may be required from time to time.

(c) To use at all times first-class, modern, standard, commercial apparatus and plant, and to exercise due skill and diligence so as to secure the most perfect operation of the plant and apparatus of the Corporation.

(d) Power shall be delivered to the Corporation at approximately 2,200 or 4,000 volts.

2. In consideration of the premises and of the covenants and agreements herein set forth, the Corporation agrees with the Commission:—

(a) To use all diligence by every lawful means in its power to prepare for the receipt and use of the power dealt with by this agreement, so as to be able to give notice as specified in paragraph 1 (b).

(b) Subject to the provisions of paragraph 2 (h) herein to pay the Commission \$17.00 per h.p. per annum for all power taken.

It is further understood and agreed that the Commission will supply and construct all 2,200 volt lines made necessary by contracts for electric service made between the Corporation and residents or users, within the township, from the Commission's transformer station or stations to the service transformers of the Corporation, and in addition to the cost of power as shown, the Corporation will pay to the Commission interest and sinking fund on a thirty year basis on all capital so invested in 2,200 volt lines, payments to be made in quarterly instalments as provided hereinafter.

(c) The amounts payable in accordance with clause 2 (b) shall be paid in four quarterly payments, in gold coin of the present standard of weight and fineness, at the office of the Commission at Toronto, and bills shall be rendered by the Commission on or before the 5th day and paid by the Corporation on or before the 15th day of each month. If any bill remains unpaid for fifteen days, the Commission may, in addition to all other remedies and without notice, discontinue the supply of power to the Corporation until said bill is paid. No such discontinuance shall relieve the Corporation from the performance of the covenants, provisoes and conditions herein contained. All payments in arrears shall bear interest at six per cent.

(d) To take electric power exclusively from the Commission during the continuance of this agreement.

(e) To pay for three-fourths of the power ordered from time to time by the Corporation and hold in reserve for it as herein provided whether it takes the same or not. When the greatest amount of power taken for any twenty consecutive minutes during any month shall exceed during the twenty consecutive minutes three-fourths of the amount ordered by the Corporation and held in reserve, then the Corporation shall pay for this greater amount during the entire month.

If the Corporation during any month takes more than the amount of power ordered and held in reserve for it for twenty consecutive minutes, the Corporation shall pay for this greater amount of power during the entire month. The taking of such excess shall thereafter constitute an obligation on the part of the Corporation to pay for and on the part of the Commission to hold in reserve an additional block of power in accordance with the terms and conditions of this contract.

When the power factor of the greatest amount of power taken for said twenty consecutive minutes falls below 90 per cent., the Corporation shall pay for 90 per cent. of said power divided by the power factor.

(f) To use at all times first-class, modern, standard, commercial apparatus and plant to be approved by the Commission.

(g) To exercise all due skill and diligence so as to secure the most perfect operation of the plant and apparatus of the Commission and the Corporation.

(h) It is hereby declared that the Commission is to be a trustee of all property held by the Commission under this agreement for the Corporation and other municipal corporations supplied by the Commission,

but the Commission shall be entitled to a lien upon said property for all moneys expended by the Commission under this agreement and not repaid. At the expiration of this agreement the Commission shall determine and adjust the rights of the Corporations and other municipal corporations supplied by the Commission, having regard to the amounts paid by them, respectively, under the terms of this agreement, and such other considerations as may appear equitable to the Commission and are approved by the Lieutenant-Governor in Council.

3. This agreement shall remain in force for thirty years from the date hereof.

4. (a) The power so taken shall be measured at the 4,000 volt side of the step-down transformers in the sub-station in the Corporation by graphic recording curve drawing meters, subject to test as to accuracy by either party hereto.

(b) The maintenance by the Commission of approximately the agreed voltage at approximately the agreed frequency at the sub-station in the limits of the Corporation shall constitute the supply of all power involved herein and the fulfilment of all operating conditions hereunder; and when voltage and frequency are so maintained, the amount of the power, its fluctuations, load factor, power factor, distribution as to phases, and all other electric characteristics and qualities are under the sole control of the Corporation, their agents, customers, apparatus, appliances and circuits.

5. The engineers of the Commission, or one or more of them, or any other person or persons appointed for this purpose by the Commission, shall have the right from time to time during the continuance of this agreement to inspect the apparatus, plant and property of the Corporation and take records at all reasonable hours.

6. In case the Commission should at any time or times be prevented from supplying said power, or any part thereof, or in case the Corporation shall at any time be prevented from taking said power, or any part thereof, by strike, or lock-out, fire, invasion, explosion, act of God, or the King's enemies, or any other cause reasonably beyond their control, then the Commission shall not be bound to deliver such power during such times, and the Corporation shall not be bound to pay the price of said power during such time, but as soon as the cause of such interruption is removed, the Commission shall without delay supply said power as aforesaid, and the Corporation shall take the same and shall be prompt and diligent in removing and overcoming such cause or causes of interruption.

7. If, and so often as, any interruption shall occur in the service of the Company due to any cause or causes, other than those provided for by the next preceding paragraph hereof, the Commission shall recover and pay to the Corporation as liquidated and ascertained damages and not by way of penalty, as follows:—

For any interruption less than one hour double the amount payable for power which should have been supplied during the time of such interruption; and for any interruption of one hour or more, the amount payable for the power which should have been supplied during the time of such interruption and twelve times the last mentioned amount in addi-

tion thereto, and all moneys payable under this paragraph when the amount thereof is settled between the Commission and the Company, may be deducted from any moneys payable by the Corporation to the Commission, but such right of deduction shall not in any case delay the said monthly payments.

8. If at any time any other municipal corporation or, pursuant to said Act, any railway or distributing company, or any other corporation or person, applies to the Commission for a supply of power, the Commission shall notify the applicant and the Corporation in writing of a time and place and hear all representations that may be made as to the terms and conditions for such supply.

Without discrimination in favor of the applicants as to the price to be paid, for equal quantity of power, the Commission may supply power upon such terms and conditions as may, having regard to the risk and expenses incurred, and paid, and to be paid by the Corporation, appear equitable to the Commission, and are approved by the Lieutenant-Governor in Council.

No such application shall be granted if the said line is not adequate for such supply, or if the supply of the Corporation will be thereby injuriously affected, and no power shall be supplied within the limits of a municipal corporation taking power from the Commission at the time of such application without the written consent of such Corporation.

In determining the quantity of power supplied to a municipal corporation, the quantity supplied by the Commission within the limits of the Corporation to any applicant, other than a municipal corporation, shall be computed as part of the quantity supplied to such corporation, but such corporation shall not be liable to pay for the power supplied, or otherwise in respect thereof. In order to prevent discrimination by the Municipal Corporation no power shall be supplied by the Municipal Corporation to any railway or distributing company without the written consent of the Commission, but the Corporation may sell power to any person or persons or manufacturing companies inside the limits of the Corporation, but such power shall not be sold for less than the cost and without discrimination as regards price and quantity.

9. In case any municipal corporation, or any person, firm or corporation which shall contract with the Commission or with any municipal corporation for a supply of power furnished to the Commission by the Power Company, shall suffer damages by the act or neglect of the Power Company, and such municipal corporation, person, firm or corporation would, if the Power Company had made the said contracts directly with them, have had a right to recover such damages or commence any proceedings or any other remedy, the Commission shall be entitled to commence any such proceedings to bring such action for or on behalf of such municipal corporation, person, firm, or corporation, and notwithstanding any acts, decision or rule of law to the contrary, the Commission shall be entitled to all the rights and remedies of such municipal corporation, person, firm or corporation, including the right to recover such damages, but no action shall be brought by the Commission until such municipal corporation, person, firm or corporation shall have agreed with the Commission to pay any costs that may be adjudged to be paid if such proceedings or action

is unsuccessful. The rights and remedies of any such municipal corporation, person, firm or corporation shall not be hereby prejudiced.

10. If differences arise between corporations to whom the Commission is supplying power, the Commission may upon application fix a time and place to hear all representations that may be made by the parties, and the Commission shall, in a summary manner, when possible, adjust such differences, and such adjustment shall be final. The Commission shall have all the powers that may be conferred upon a Commissioner appointed under the Act respecting Enquiries concerning Public Matters.

11. If differences arise between the Corporation and the Commission, the Lieutenant-Governor in Council may, upon application, fix a time and place to hear all representations that may be made by the parties, and the Lieutenant-Governor in Council shall, in a summary manner, when possible, adjust such differences, and such adjustment shall be final. The Lieutenant-Governor in Council shall have all the powers that may be conferred upon a Commissioner appointed under the Act respecting Enquiries concerning Public Matters.

12. To co-operate, by all means in its power, at all times, with the Commission, to increase the quantity of power required from the Commission, and in all other respects to carry out the objects of this agreement and of the said Act.

13. This agreement shall extend to, be binding upon and enure to the benefit of the successors and assigns of the parties hereto.

In witness whereof the Commission and the Corporation have respectively affixed their corporate seals and the hands of their proper officers.

HYDRO-ELECTRIC POWER COMMISSION OF ONTARIO.

A. BECK, *Chairman*.

(Seal)

W. W. POPE, *Secretary*.

THE MUNICIPAL CORPORATION OF THE TOWNSHIP OF
GRANTHAM.

L. S. HESSEVY, *Clerk*.

FRED. HEWART, *Reeve*.

SCHEDULE "G."

This Indenture, made (in duplicate) this tenth day of March, in the year of our Lord one thousand nine hundred and fourteen,

Between

The Hydro-Electric Power Commission of Ontario, hereinafter called the "Commission," of the first part,

and

The Corporation of the Township of Tay, hereinafter called the "Corporation," of the second part.

Whereas, pursuant to "An Act to provide for local distribution of electrical power" known as "The Power Commission Act of 1911," the Corporation of the Township of Tay has, at the request of a number of rate-payers (petitioners), applied to the Commission for the supply of electrical power and energy, and has passed a by-law, No. 597, to authorize the execution of an agreement;

Now, therefore, this Indenture witnesseth, that in consideration of the premises and of the agreements of the Corporation herein set forth, subject to the provisions of said Act and of the said contract, the Commission agrees with the Corporation:—

1. (a) To reserve and deliver at the earliest possible date 100 h.p. or more of electric power to the Corporation at two different points in the Township, known respectively as Waubaushe and Port McNicoll, and to erect sub-stations at both of these points for the purpose of receiving the power and stepping down the power to a voltage suitable for distribution purposes.

(b) At the expiration of thirty days' notice in writing, which may be given by the Corporation from time to time during the continuance of this agreement, to reserve and deliver to the Corporation additional electric power when called for in blocks of 25 h.p. each up to the limit of the capacity of the Power Company.

(c) To use at all times first-class, modern, standard commercial apparatus and plant, and to exercise all due skill and diligence so as to secure satisfactory operation of the plant and apparatus of the Corporation.

(d) The power shall be delivered to the Corporation at approximately 2,200 volts, and at approximately 60 cycles per second, at both sub-stations hereinbefore mentioned.

2. In consideration of the premises and of the agreements herein set forth, the Corporation agrees with the Commission:—

(a) To use all diligence by every lawful means in its power to prepare for the receipt and use of the power dealt with by this agreement so as to be able to receive power when the Commission is ready to deliver same.

(b) Subject to the provisions of 2 (f) hereof, to pay the Commission the following prices:—\$20.00 per h.p. per annum for all power taken until the demands of the Commission on the Power Company shall equal or exceed 500 h.p.

When the demand of the Commission on the Power Company shall have increased to 500 h.p. to pay \$19.00 per h.p. per annum for all or any proportion thereof taken by the Corporation.

When the demand of the Commission on the Power Company shall have increased to 1,000 h.p. to pay \$18.00 per h.p. per annum for all or any proportion thereof taken by the Corporation.

When the demand of the Commission on the Power Company shall have increased to 1,500 h.p. to pay \$16.50 per h.p. per annum for all or any proportion thereof taken by the Corporation.

Nothing herein contained shall bind the Commission to supply power on the demand of the Corporation after the demand of the Commission on the Power Company exceeds 1,500 h.p., unless the Power Company has power available or capable of development.

(c) To pay in addition annually, interest at $4\frac{1}{2}$ per cent. per annum upon the moneys expended by the Commission on capital account for the construction of the two transformer stations and equipment, and any other necessary works required for the delivery of power and transforming it from 22,000 to 2,200 volts.

Also to pay an annual part of the cost of the construction of said sub-stations and works, so as to form in thirty years a sinking fund for the retirement of the moneys advanced by the Province of Ontario in connection with this work.

Also to pay the cost of operating, maintaining, repairing, renewing and insuring the said sub-stations and works.

(d) The amounts payable under this contract shall be paid in twelve monthly payments, in gold coin of the present standard of weight and fineness, at the office of the Commission at Toronto, and bill shall be rendered by the Commission on or before the 5th day and paid by the Corporation on or before the 15th day of each month. If any bill remains unpaid for fifteen days, the Commission may, in addition to all other remedies and without notice, discontinue the supply of power to the Corporation until said bill is paid. No such discontinuance shall relieve the Corporation from the performance of the covenants, provisoes and conditions herein contained. All payments in arrears shall bear interest at the legal rate.

(e) To take electric power exclusively from the Commission during the continuance of this agreement.

(f) To pay for three-fourths of the power ordered from time to time by the Corporation and held in reserve, as herein provided, whether it takes the same or not. When the sum of the greatest amounts of power taken for any twenty consecutive minutes at the two locations at which

the power is to be delivered during any month shall exceed during the twenty consecutive minutes three-fourths of the amount ordered by the Corporation and held in reserve, then the Corporation shall pay for this greater amount during the entire month, and when this sum exceeds the amount of power ordered and held in reserve for it as aforesaid, the taking of such excess shall thereafter constitute an obligation on the part of the Corporation to pay for, and on the part of the Commission to hold in reserve, an additional block of power in accordance with the terms and conditions of this contract.

When the power factor of the greatest amount of power taken for the said twenty consecutive minutes falls below 90 per cent. the Corporation shall pay for 90 per cent. of said power divided by the power factor, this clause to apply separately to each of the two sub-stations at which the power is delivered.

(g) To use at all times first-class, modern, standard commercial apparatus and plant, approved by the Commission.

(h) To exercise all due skill and diligence so as to secure satisfactory operation of the plant and apparatus of the Commission and the Corporation.

(i) To co-operate, by all means in its power, at all times, with the Commission, to increase the quantity of power required from the Commission, and in all other respects to carry out the objects of this agreement and of the said Act.

3. This agreement shall remain in force for ten years from the date of the first delivery of power under this contract. The Corporation may, at its option, continue this agreement for one or two further consecutive terms, the first of these two additional terms being of five years' duration, and the second of such length that the expiry thereof shall fall on the 10th day of September, 1929.

(a) Provided, however, that in the event of the Commission being in a position to furnish power either by a further agreement with the Simcoe Railway & Power Company or otherwise, the Corporation may, at its option, continue this agreement for a further term of twelve years' duration.

(b) The Corporation may exercise the first of these options by giving notice in writing of its intention to continue this agreement for the second term of five years at least two years before the expiration of the first term of ten years.

(c) The Corporation may exercise the second of these options by giving notice to the Commission in writing of its intention to continue this agreement for the third term until the expiry day of September 10th, 1929, at least two years before the expiration of the second term of five years.

(d) The Corporation may, subject to the conditions set out in paragraph 3 (a) exercise the further option therein mentioned by giving the Commission notice in writing of its intention to continue this agreement for the further term of twelve years at least two years before the expiration of the terms falling on the 10th day of September, 1929.

4. The power shall be approximately 2,200 volts, 60 cycles, three phase alternating, commercially continuous 24 hour power, every day in the year except as provided herein, and shall be delivered and measured by the Commission to the Corporation at the 2,200 volt terminals of the step-down transformers in the sub-stations located at the two different points in the township hereinbefore mentioned.

(a) That the meters, with their series of potential transformers, may be connected at either of the two sub-stations, or at both, to the high-tension side or low-tension side of the transformers, or some connected to one side and some connected to the other, as the Commission may elect. That whenever connected to other than the point of measurement their readings shall be subject to a correction and shall be corrected to give a reading such as would be obtained by instruments as if connected at the point of measurement. That such corrections shall be based upon tests made upon the step-down transformers and transmission lines by the Commission, or any other tests upon them acceptable to the Commission as to the efficiency, regulation, or any other constants of the transformers and the transmission lines necessary for said correction, but that such tests, when made by the Commission, are to be made in the presence of the representatives or representative of the customer if it so desires.

(b) The maintenance by the Commission of approximately the agreed voltage at approximately the agreed frequency at both of the sub-stations previously mentioned at which the power is to be delivered, shall constitute the supply of all power involved herein, and the fulfilment of all operating obligations hereunder; and when voltage and frequency are so maintained, the amount of power, its fluctuations, load factor, power factor, distribution as to phases, and all other electric characteristics and qualities are under the sole control of the Corporation, their agents, customers, apparatus, appliances and circuits.

5. The engineers of the Commission, or one or more of them, or any other person or persons appointed for this purpose by the Commission, shall have the right from time to time during the continuance of this agreement to inspect the apparatus, plant and property of the Corporation and take records at all reasonable hours.

6. In case the Commission should at any time or times be prevented from supplying said power, or any part thereof, or in case the Corporation shall at any time be prevented from taking said power, or any part thereof, by strikes, lock-out, fire, invasion, explosion, act of God, or the King's enemies, or any other cause reasonably beyond their control, then the Commission shall not be bound to deliver such power during such times, and the Corporation shall not be bound to pay the price of said power during such times, but as soon as the cause of such interruption is removed, the Commission shall without any delay supply said power a saforesaid, and the Corporation shall take the same and shall be prompt and diligent in removing and overcoming such cause or causes of interruption.

7. If, and so often as, any interruption shall occur in the service of the Power Company due to any cause or causes other than those provided for by the next preceding paragraph herein, the Commission shall recover and pay to the Corporation as liquidated and ascertained damages, and not by way of penalty, as follows:—

For any interruption of less than one hour double the amount payable for power which should have been supplied during the time of such interruption; and for any interruption of one hour or more the amount payable for the power which should have been delivered during the time of such interruption, and six times the last mentioned amount in addition thereto, and all moneys payable under this paragraph, when the amount thereof is settled between the Commission and the Company, may be deducted from any money payable by the Corporation to the Commission, but such right of deduction shall not in any case delay the said monthly payments.

8. If at any time any other municipal corporation or, pursuant to said Act, any railway or distributing company, or any other corporation or person, applies to the Commission for a supply of power, the Commission shall notify the applicant and the Corporation in writing, of a time and place and hear all representations that may be made as to the terms and conditions of such supply.

Without discrimination in favor of the applicants as to the price to be paid for equal quantity of power, the Commission may supply power upon such terms and conditions as may, having regard to the risk and expense incurred, and paid and to be paid by the Corporation, appear equitable to the Commission, and are approved by the Lieutenant-Governor in Council.

No such application shall be granted if the said line is not adequate for such supply, or if the supply of the Corporation will be thereby injuriously affected, and no power shall be supplied within the limits of a municipal corporation taking power from the Commission at the time of such application without the written consent of such Corporation.

In determining the quantity of power supplied to a municipal corporation, the quantity supplied by the Commission within the limits of the Corporation to any applicant, other than a municipal corporation, shall be computed as part of the quantity supplied to such Corporation, but such Corporation shall not be liable to pay for the power so supplied, or otherwise in respect thereof. In order to prevent discrimination by the municipal corporation, no power shall be supplied by the municipal corporation to any railway or distributing company without the written consent of the Commission, but the Corporation may sell power to any person or persons or manufacturing companies inside the limits of the Corporation, but such power shall not be sold for less than the cost and without discrimination as regards price and quantity.

9. In case any municipal corporation, or any person, firm or corporation which shall contract with the Commission or with any municipal corporation for a supply of power furnished to the Commission by the Power Company shall suffer damages by the act or neglect of the Power Company, and such municipal corporation, person, firm or corporation would, if the Power Company had made the said contracts directly with them, have had a right to recover such damages or commence any proceedings or any other remedy, the Commission shall be entitled to commence any such proceedings or bring such action for or on behalf of such municipal corporation, person, firm or corporation, and notwithstanding any acts, decision or rule of law to the contrary, the Commission shall be entitled to all the rights and remedies of such municipal corporation, person, firm

or corporation, including the right to recover such damages, but no action shall be brought by the Commission until such municipal corporation, person, firm or corporation shall have agreed with the Commission to pay any costs that may be adjudged to be paid if such proceedings or action is unsuccessful. The rights and remedies of any such municipal corporation, person, firm or corporation shall not be hereby prejudiced.

10. It is hereby declared that the Commission is to be a trustee of all property held by the Commission under this agreement for the corporations and other municipal corporations supplied by the Commission, but the Commission shall be entitled to a lien upon said property for all moneys expended by the Commission under this agreement and not repaid. At the expiration of this agreement the Commission shall determine and adjust the rights of the corporations and other municipal corporations supplied by the Commission, having regard to the amounts paid by them respectively under the terms of this agreement, and such other considerations as may appear equitable to the Commission and are approved by the Lieutenant-Governor in Council.

11. If differences arise between corporations to whom the Commission is supplying power, the Commission may, upon application, fix a time and place to hear all representations that may be made by the parties, and the Commission shall, in a summary manner, when possible, adjust such differences, and such adjustment shall be final. The Commission shall have all the powers that may be conferred upon a Commissioner appointed under *The Act respecting Enquiries concerning Public Matters*.

12. If differences arise between the Corporation and the Commission, the Lieutenant-Governor in Council may, upon application, fix a time and place to hear all representations that may be made by the parties, and the Lieutenant-Governor in Council shall, in a summary manner, when possible, adjust such differences, and such adjustment shall be final. The Lieutenant-Governor in Council shall have all the powers that may be conferred upon a Commissioner appointed under *The Act respecting Enquiries concerning Public Matters*.

13. This agreement shall extend to, be binding upon, and enure to the benefit of the successors and assigns of the parties hereto.

In witness whereof the Commission and the Corporation have respectively affixed their corporate seals and the hands of their proper officers.

HYDRO-ELECTRIC POWER COMMISSION OF ONTARIO.

A. BECK, *Chairman*.

W. W. POPE, *Secretary*.

(Seal)

CORPORATION OF THE TOWNSHIP OF TAY.

J. O. STAFFORD, *Reeve*.

T. M. BROWN, *Clerk*.

(Seal)

SCHEDULE "H."

TO CLOSE PORTIONS OF CERTAIN ROAD ALLOWANCES IN THE TOWNSHIP OF
ARTEMESIA, PASSED 20TH MARCH, 1915.

Whereas, upon request of the Hydro-Electric Power Commission of Ontario, they having purchased the greater portion of the lands affected, and desiring to flood the same, together with certain public highways in connection with their development of electric energy, it is recommended that portions of certain road allowances in the Township of Artemesia, as set forth in a plan submitted by the said Commission, and being the several parcels hereinafter described, be stopped up and closed, and that a by-law be introduced for this purpose.

And whereas it is expedient to pass such by-law.

Therefore the Council of the Township of Artemesia enact as follows:—

That so much of each of the said road allowances be stopped up and closed as is hereinafter described, that is to say:—

Parcel 1.—All that part of the road allowance between the 10th and 11th concessions of the Township of Artemesia from the easterly limit of Inkerman Street to the westerly limit of the road allowance between lots 35 and 36 in same concessions, containing by admeasurement 17 acres, be the same more or less.

Parcel 2.—All that part of the road allowance between lots 30 and 31 in the 10th, 11th and part of the 12th concessions of the Township of Artemesia from the southerly limit of lots 30 and 31 in the 10th concession to a point 11 chains north of the southerly limits of lots 30 and 31 in the 10th concession, containing by admeasurement 11.2 acres, be the same more or less.

Parcel 3.—All that part of East Street in Townplot of Eugenia in the Township of Artemesia extending from the northerly limit of the 10th concession to 2 chains southerly of the southerly limit of the said 10th concession, containing by admeasurement 5.2 acres, be the same more or less.

Parcel 4.—All that part of Kinburn Street in the Townplot of Eugenia in the Township of Artemesia extending from the southerly limit of Codrington Street to the southerly limit of Simpson Street, containing by admeasurement 1.1 acres, be the same more or less.

Parcel 5.—All that part of Codrington Street extending from the easterly limit of Cardigan Street to the westerly limit of East Street, containing by admeasurement 2.1 acres, be the same more or less.

Parcel 6.—All that part of Pellisier Street extending from the easterly limit of lot 8 to the westerly limit of East Street, containing by admeasurement 1.7 acres, be the same more or less.

Parcel 7.—All that part of Simpson Street extending from the easterly limit of lot 8 to the westerly limit of East Street, containing by admeasurement 1.7 acres, be the same more or less.

Parcel 8.—All that part of the road allowance between the 12th and 13th concessions of the Township of Artemesia from the westerly limit of lot 26 to a point 7 chains east of the westerly limit of lot 26, containing by admeasurement .7 acres, be the same more or less.

W. J. BELLAMY, *Clerk.*

J. R. MCKENZIE, *Reeve.*

RIGHT-OF-WAY

High-Tension Lines

During this year the Department has devoted its energies to the closing of purchases of the outstanding cases on the line from St. Thomas to Windsor, the acquisition of the lands required for the reservoir and other works in connection with the Eugenia Falls development (consisting of about two thousand acres) and the acquiring of title to the right-of-way involved in the construction of the additional line from Niagara Falls to Dundas.

The St. Thomas to Windsor right-of-way may now be considered as completed, the only remaining cases not being disposed of consisting of a few where the owners are not in a position to give a proper title to the lands required, and some half-dozen cases in the Township of Sandwich East where the prices asked are considered far in excess of their value. These demands will, it is expected, soon be modified and the transactions closed.

On the Niagara Falls-Dundas line the work of purchase is nearly complete, the only cases not disposed of being a few where the owners and agents of the Commission have not agreed as to the price. It is expected that these will be cleared up in a short time.

The purchase of lands at Eugenia Falls has been fully completed to the mutual satisfaction of all parties concerned.

The aim of the Right-of-Way Department in all its dealings has been to see that uniform prices compatible with local conditions shall be paid. The work has been practically completed without resort to litigation or arbitration.

The office at St. Catharines is now closed, since which time the work has been carried on from the Head Office at Toronto.

Low-Tension Lines

During the past year, approximately 400 miles of low-tension line has been completed, making it necessary for the Right-of-Way Department to deal with over 1,000 owners for tree trimming rights, pole, anchor and guy rights, etc. This work also involved the necessity of securing highway rights through various townships, all of whom have seemed anxious to work in harmony with the Commission and assist as far as possible in order that power and light may reach the most remote districts at minimum cost.

CROSSINGS

The construction of the high-tension and low-tension lines during the year rendered it necessary to secure permission for crossings over steam and electric railways, telegraph, telephone and power companies for crossings to the number of 400. In each case it is necessary to prepare applications and blue prints, and where consent is not given, these are submitted to the Railway Board for their approval, all of which necessarily entailed a very considerable amount of work. It was also found necessary to make a number of applications to the Dominion Government for river and canal crossings under the Navigable Streams Act. The Commission's plans in all cases have been approved and passed by the interested parties.

RADIAL RAILWAYS

As will be seen by reference to the Act set out on page 1 of this report, agreements were entered into, submitted and carried by various municipalities in what is known as the "North-eastern District," and legislation passed approving of such agreements.

Throughout the year a great deal of attention has been given to this subject, new legislation considered by the Commission and careful thought given to its various aspects. Detailed engineering report in this connection will be found on another page.

INSPECTION

It has been the aim of the Commission to have all public buildings in the Province, either Provincial or Federal, placed under the control of the Inspection Department as far as wiring, etc., goes. Steps are now being completed towards this end. New offices were opened on the first floor of the Temple Building, owing to the large increase of work and also to accommodate the inspection for the City of Toronto.

The records of the past year have shown a remarkably small number of accidents throughout the Province due to defective wiring, etc., and this state of affairs has been greatly improved since the taking on of this work by the Commission.

NIAGARA DEVELOPMENT SCHEME

As a result of the exhaustion of the Commission's present contract for power at Niagara Falls and the urgent need for more power owing to the rapid increase of the load, and in compliance with a resolution passed by the Ontario Hydro Municipal Association, the Board called for a careful investigation of the means and possibilities of obtaining an additional supply of power from Niagara. The outcome of this investigation, which was thorough and exhaustive from an engineering standpoint, was the formulation of a project to utilize the surplus of water still available from the Niagara River under the terms of the Boundary Waters Treaty, in such a way as to take advantage of the total difference in level between Lake Erie and Lake Ontario. This matter is now receiving the serious consideration of both Provincial and Federal authorities.

POWER FOR EASTERN DISTRICT

For the past two years negotiations have been in more or less continuous progress with a view to solving the power problem in Eastern Ontario. The efforts of the Commission in this direction have, however, been seriously hampered through not having been able up to the present time to reach what they consider to be a reasonable basis of negotiation with the private interests involved. It is now hoped that in the near future definite steps will be taken which will assure the eastern district of an ample supply of power through the Commission.

AGREEMENTS

During the fiscal year agreements for a supply of power have been made with the municipalities of Ailsa Craig, Blenheim, Bothwell, Comber, Chatsworth, Chesley, Dutton, Dundalk, Durham, Delaware, Exeter, Flesherton, Gravenhurst, Huntsville, Harriston, Holstein, Lambeth, Listowel, Lynden, Mt. Brydges, Mt.

Forest, Milverton, Niagara Falls, Orangeville, Palmerston, Petrolia, Ridgetown, Shelburne, St. George, Thamesville, Victoria Harbor and Williamsburg.

An agreement was also entered into with the Union Carbide Company for an additional supply of 8,000 h.p.

An agreement for the supply through the Toronto Hydro-Electric system of 3,000 h.p. was made with the Interurban Power Company, of Toronto.

Owing to the fact that the supply of power under contract with the Ontario Power Company had become exhausted owing to the heavy load, it became necessary during the past year to enter into a temporary contract with the Toronto Power Company for the supply of 16,000 h.p.

SECTION II

TRANSMISSION SYSTEM

STEEL TOWER TRANSMISSION LINES

Surveys

NIAGARA DUPLICATION

There was no extensive survey work on this line during the fiscal year of 1915, the main part of the work having been completed in 1914.

DUNDAS-HAMILTON

A complete survey of this line was made in 1914 and the route described in the Annual Report for that year. However, the decision of the City of Hamilton to grade certain roads and streets along which the original route was staked necessitated a new layout for practically one-half of the total length of line.

The revised location may be described as follows:—

Commencing at Dundas interswitching station the line runs in a southerly direction a distance of .71 miles to the intersection of Fifth Avenue of the McKittrick survey; it then deflects to the east along the north side of Fifth Avenue a distance of .91 miles to the intersection of Seventh Street of the McKittrick survey, and turning north follows this street a distance of .27 miles on the east side to the intersection of the production of Hunt Street, Hamilton, where it again deflects to the east along the north side of Hunt Street a distance of .964 miles to Dundurn transformer station, Hamilton. The total length of the line is 2.854 miles.

Contracts for Material

DUNDAS-HAMILTON

Tenders were asked for the supply of the different kinds of transmission line material required, and contracts were let to the following companies:—

To the Canadian Bridge Company of Walkerville, the supply of steel poles and footings.

To the Canada Wire & Cable Company of Toronto, the supply of 4/0 copper cable.

To the Canadian Porcelain Company of Hamilton, and the Ohio Brass Company of Mansfield, Ohio, the supply of insulators.

To the Steel Company of Canada, the supply of steel insulator pins.

To the Frost Wire Fence Company of Hamilton, the supply of No. 8 E.B.B. iron wire for telephone.

To the Acme Tool & Stamping Company of Hamilton, the supply of steel straps.

To the St. Mary's Cement Company of St. Mary's, the supply of cement.

To the Galt Malleable Iron Company of Galt, the supply of 6-bolt strain clamps.

U bolts, clamps, tower eyes, shims, parallel groove clamps, 5/16 in. ground wire and 6-pin cross-arms were supplied from the Hydro-Electric Power Commission stores.

Organization

NIAGARA DUPLICATION

The field organization for the year 1915 consisted of tower footing, tower assembling, tower erection, right-of-way clearing, fence, insulator and cable erection gangs on the transmission line, and a wire stringing gang on the telephone line.

DUNDAS-HAMILTON

The field organization for the Dundas-Hamilton steel pole line was similar to that of the Niagara duplication, except that a much reduced force of men was used.

Progress of Construction

NIAGARA DUPLICATION

The total length of the Niagara duplication is 50.03 miles. Work was commenced on June 23rd, 1914, and completed on February 26th, 1915.

DUNDAS-HAMILTON

The total length of the Dundas-Hamilton line is 2.854 miles. Work was commenced on this line on April 7th, 1915, and completed on September 24th, 1915.

Special Construction

On account of the new Niagara-Dundas line having copper conductors and paralleling, within 60 feet, the old line through the Dundas Valley, and this latter line having aluminum conductors, it was decided to replace this aluminum by 4/0 copper.

The work necessary to be done was to take down 10.2 wire miles of 4/0 aluminum and erect the same number of wire miles of 4/0 nineteen strand copper.

This work was commenced on February 13th, 1915, and completed March 10th.

Another piece of special construction was the stringing of aluminum conductors on the Dundas-Hamilton steel poles from Dundurn Station at Hamilton to the Cooper Brick Works, a distance of 4,732 feet. This work was done for the City of Hamilton, and consisted of erecting three No. 2/0 aluminum conductors over the full distance to supply power to the brick works, and the erection of two additional No. 2/0 aluminum conductors for a distance of 1,810 feet from Dundurn Station to be used for a lighting circuit.

This work was commenced on September 24th, 1915, and completed on October 2nd.

STATION BUILDING AND EQUIPMENT DEPARTMENT

GENERAL

Station Construction

At the time of the last Annual Report there were a number of stations under construction which have since been completed and placed in operation. These are located at Dundas, Strathroy, Central Prison Farm, Embro, Mimico, Drumbo, Ayr, Tilbury, Waubauskene, Port McNichol, Brockville and Georgetown. During the past year stations have been constructed at Dorchester, Lucan, Delaware, Burford, Dutton, Waterford, Lynden, Simcoe, Chatham, Wallaceburg, Bothwell, Thamesville, Blenheim, Dresden and Eugenia Falls, and at the present time there are fourteen stations which have been authorized this year, and on the majority of these the construction work is well advanced. These will be located at Ridgetown, Listowel, Exeter, Milverton, Palmerston, Petrolia, Niagara Falls, Owen Sound, Chesley, Chatsworth, Durham, Dundalk, Mount Forest, and South Falls.

Changes and Additions to Stations

Changes or additions of transformers, switching equipment or both, have been made to twenty or more existing stations, these being necessitated by increase of load on the station in the majority of cases, and by additional feeders being required in others. The new stations and those in which changes have been made are discussed later in this report.

Eugenia System

The Eugenia System will be placed in continuous operation within a few days, the final operating tests now being under way on the turbines, generators and transmission lines. The distributing stations at Owen Sound, Durham, Dundalk and Mount Forest will be ready to receive power when the generating station is placed in service, and the other station at Chatsworth, now under construction, will be ready for operation soon afterwards. The station at Chesley will soon be under construction.

Fuse Tests

Different types of expulsion fuses manufactured by various firms were obtained and the operating characteristics investigated at the Commission's laboratory on Strachan Avenue in order to determine the types most suitable for use in the Commission's various distributing stations. These fuses vary in voltage and capacity over a considerable range.

Photographs and oscillographs were taken at the time of the tests, and very useful information for future reference was secured.

London Railway Commission

The construction of car barns at London for the London Railway Commission is under way, the drawings and specifications having been prepared by the Commission and the contract awarded to Messrs. John Hayman & Sons, contractors, of London, with the approval of the London Railway Commission.

These car barns are approximately 102 feet by 150 feet, with provisions made at the front for suitable office quarters. There are four tracks entering the building, and under each track is provided a repair pit.

It is the intention ultimately to extend this building so that it will have a depth of 220 feet, when the number of cars warrants, and with this end in view the rear wall of the building is constructed temporarily of corrugated sheet steel, the other walls being of brick.

London and Port Stanley Railway

All sub-station equipment for supplying this railway was tested in the factory before shipment by the Commission's engineers. By July 1st sufficient apparatus was installed for operating the system, and by August 31st the installation was completed at both the Horton Street Station of the London Utilities Commission and the extension to the Commission's transformer station at St. Thomas.

Public Utilities Commission of Peterboro

At the request of the Public Utilities Commission of Peterboro, plans and specifications are being prepared for a sub-station designed to accommodate switching and protective equipment for three 44,000-volt lines with three 1,500-kv.a. three-phase transformers, space being provided for a fourth transformer.

Two thousand three hundred volt switching and metering equipment for the transformers and feeders will be included, and provision will be made for carrying all 2,300-volt feeders out of the station underground.

Administration Building

Work progressed during the entire year on construction of the Administration Building on University Avenue, and at the present time (October 31st) the building is completely enclosed; the interior work, however, will not be completed until about January, 1916.

A great deal of difficulty was encountered in securing suitable foundation for the building. It was found that at one time a ravine with a creek ran diagonally across the building site. Beneath the ravine lay an extensive bed of quick-sand. To obtain suitable foundation it was essential to sink caissons to rock surface, this being about 60 feet below the street level. The building practically stands on concrete pillars 50 feet high, twenty-four being 3 ft. 6 in. in diameter and four being 6 ft. in diameter. Owing to the difficulty in securing suitable foundations the building construction was delayed materially.

The contract, awarded to Messrs. Witchall & Son, which was referred to in the last annual report, covered excavation, concrete, brick and stone masonry, structural steel work, floors, interior partitions, in short, the structural portions of the building.

In placing other contracts the Commission endeavored to use, where suitable, material manufactured in Canada, and, where possible, by Hydro power. The following are some of the sub-contractors of Witchall & Son, who use Hydro power in the production of material supplied by them:—

Pressed brick—Inter-Provincial Brick Co., Cheltenham.

Cement—St. Marys Portland Cement Co., St. Marys.

Cut stone work—Witchall & Son, Toronto.

Gypsum partition blocks—Ebsary Co., Caledonia.

Paint—Dominion Paint Works, Walkerville.

Other contracts which were placed direct by the Commission with contractors using Hydro power are as follows:—

Sash and casement—Trussed Concrete Steel Co., Walkerville.
Plastering—R. C. Dancy, Toronto.
Marble work—Canada Glass, Mantels & Tile Co., Toronto.
Hollow steel doors and trim—A. B. Ormsby Co., Toronto.
Elevators and dumb waiter—Otis-Fensom Elevator Co., Toronto.
Radiators—Steel & Radiation, Ltd., Toronto.
Iron valves—Canadian Fairbanks-Morse, Toronto.
Pumps—Canadian Buffalo Forge, Berlin.
Door hardware—Aikenhead Hardware Co. (Canadian Yale & Towne).

Some of the other contracts placed by the Commission were:—

Fire escapes—Dominion Ornamental Iron Co.
Bronze work—Architectural Bronze & Iron Works.
Boilers—Waldon Heating Co.
Switchboard—Canadian Westinghouse Co.
Piping—G. E. B. Grinyer.
Plumbing system—Keiths, Ltd.
Plumbing fixtures—Imperial Products.
Smokestack—Toronto Iron Works.
Glazing—Toronto Plate Glass Co.

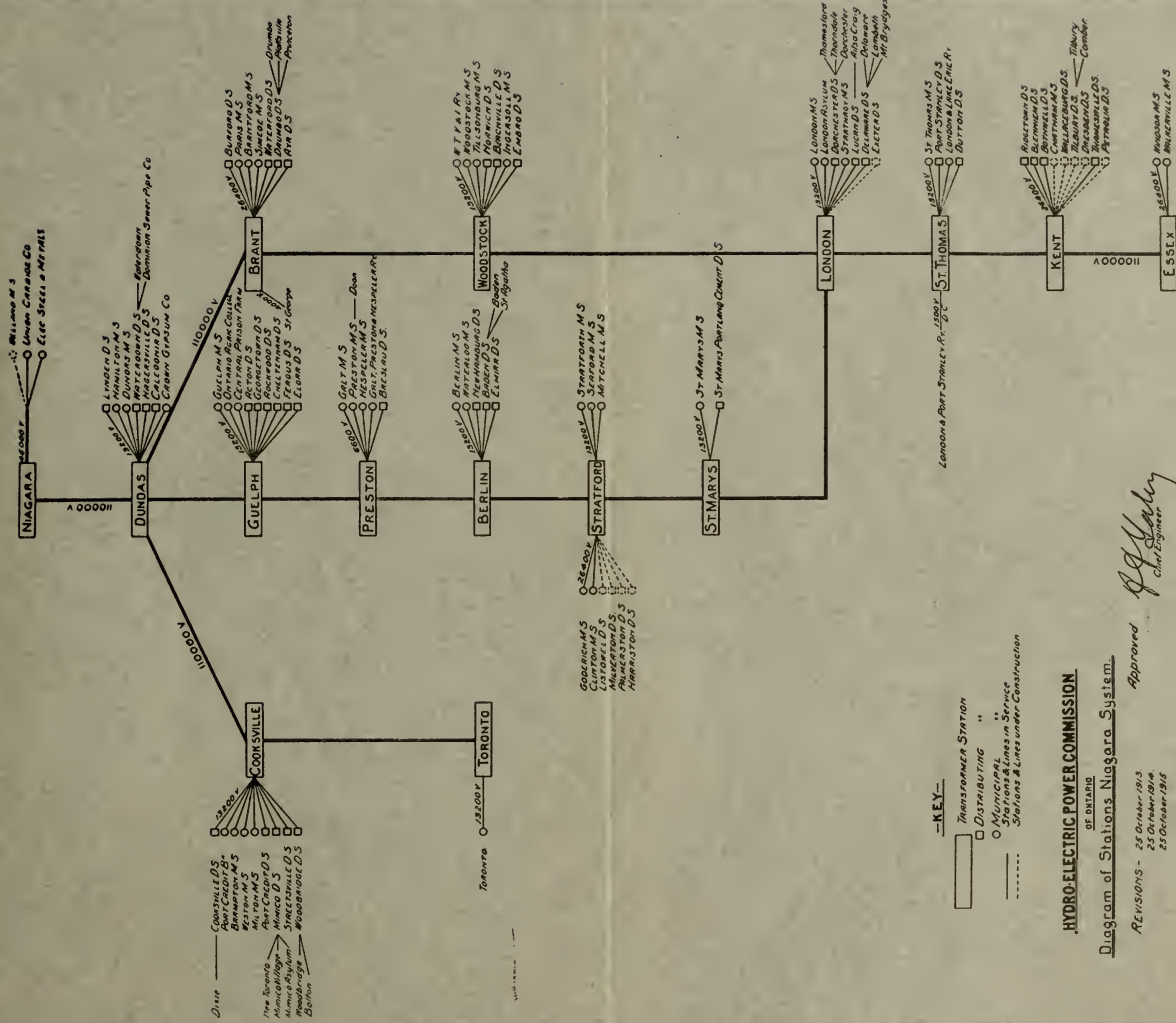
The building is rectangular in shape, with a frontage on University Avenue of 88 feet and a depth of 70 feet.

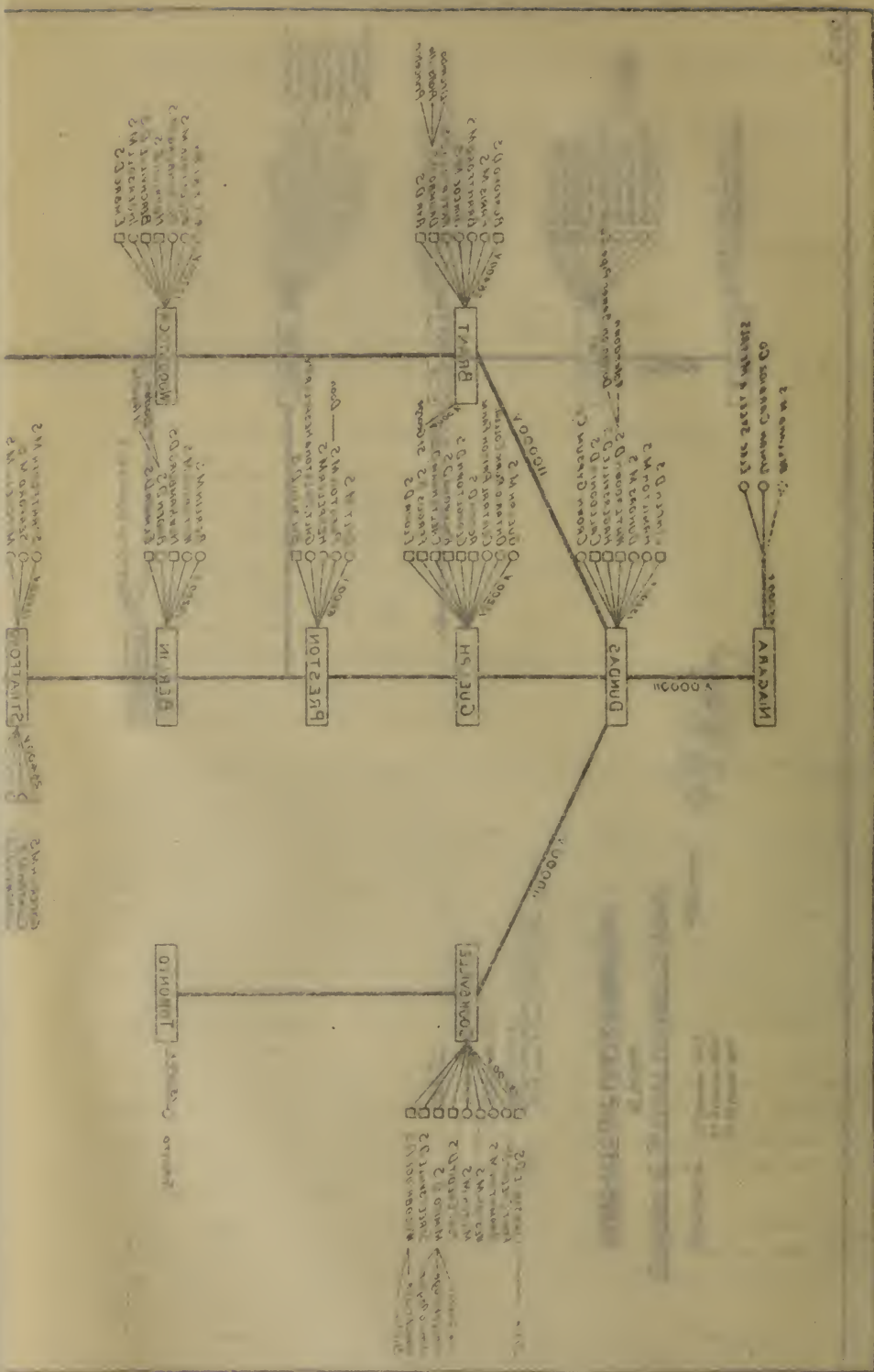
The entrance hall on the main floor will have a floor of white Renfrew and a dado of Bancroft white marble. The doors off this main hall will be of solid bronze. The stairway and elevators, which are located in interior bays, lead directly off the main hall. The balance of the main floor, excepting the toilets and a small room to be used for the telephone switchboard, will be used by the Accounting and Filing Departments. The files will be located on this floor, and files may be dispatched to any other floor by means of an electrically operated automatic dumb waiter. Elevator service will be supplied by two elevators operated by 25-cycle motors.

The second or executive floor will contain the Board Room, Chairman's and Commissioners', Chief Engineer's and Secretary's offices, also a Library and Conference Room. This floor will be finished with mahogany-finished hollow steel doors and trim and real mahogany dados in the Board Room and Chairman's and Commissioners' offices.

The upper floors contain Municipal, Purchasing, Operating, Railway, Hydraulic, Station Equipment and Building, Line Construction and other Departmental offices and draughting rooms. These floors are finished in Circassian walnut finished hollow steel doors and trim.

In the basement there will be a private and main dining-room, where lunch will be served for employees, also the necessary kitchen. The boiler and switchboard rooms and file and stationery storage rooms are also located in the basement.





The heating of the building will be accomplished by a forced hot-water system. A vacuum system will also be provided, with three outlets at each floor for cleaning. Electric power for lighting and for motors in the building will be furnished by the Toronto Hydro-Electric System at 2,300 volts, which voltage will be reduced to 230 and 115 by transformers in a transformer area.

NIAGARA SYSTEM

Niagara Transformer Station

Building Extension

Partitions were erected in the south-west portion of the basement to provide storerooms for the Maintenance Department. An extension to the 12,000-volt concrete bus and switch structure was completed to provide for the switches required for Nos. 8, 9 and 10 feeders, for Nos. 6 and 7 banks of 12,000/63,500-volt transformers, and for No. 3 bank of 12,000/45,700-volt transformers. This work was done by Messrs. Wells & Gray, contractors, of Toronto.

Low-Tension Feeders

The installation of the five 300,000 c.m. lead-covered, paper-insulated cable feeders, referred to in the last report as being purchased from the Canadian British Insulated Co. and from the Standard Underground Co., was completed. These are feeders numbers 5, 6, 7, 8 and 9. No. 5 was placed in service at the end of October, 1914, No. 6 on November 3rd, 1914; No. 7 on December 22nd, 1914, No. 8 on February 10th, 1915, and No. 9 on August 31st, 1915.

It is now contemplated installing two additional feeders of armoured cable a few feet to the north of No. 2 duct line, and tenders on this material have been asked for. These cables will be 300,000 c.m., three conductor, double steel taped and with jute coating. It is proposed to bury them in the earth without the use of ducts. These will be used as complete spare feeders.

High-Tension Equipment

The 110,000-volt apparatus for No. 5 bank of 12,000/63,500-volt transformers and Nos. 3 and 4 outgoing lines has been completely installed. These two outgoing lines were placed in operation on February 28th, 1915, and No. 5 bank of transformers on November 4th, 1914.

Additional Electrical Equipment

The Canadian Westinghouse Co. were awarded, in January, 1915, the contract for No. 6 bank of 12,000/63,500-volt oil-insulated, water-cooled transformers and the necessary high-tension and low-tension switching equipment for same, for Nos. 8 and 9 feeders and also for a 110,000-volt bus sectionalizing non-automatic oil switch with disconnecting switches.

This No. 6 bank consists of three 3,500-kv-a 12,000/63,500-volt, oil-insulated water-cooled transformers supplied by No. 8 incoming 12,000-volt feeder. The equipment for the control of these feeders and this transformer bank is exactly the same as that installed for feeder No. 6 and transformer bank No. 5, and was placed in service November 4th, 1915. The 12,000-volt bus was extended and sectionalizing disconnecting switches placed between the points where No. 8 and No. 9 feeders connect in.

The 110,000-volt sectionalizing oil switch with disconnecting switches on either side was installed in the 110,000-volt bus between the points where No. 4

and No. 5 banks of transformers connect in. The transformer bank and bus sectionalizing switch above referred to was completed and placed in operation on October 12th, 1915.

Tenders were obtained and a contract was placed with the Canadian Westinghouse Co. on October 7th, 1915, for No. 7 bank of 12,000/63,500-volt oil-insulated, water-cooled transformers with the necessary switching equipment for same and for the incoming 12,000-volt feeder No. 10. It is expected that this equipment will be ready for service in the spring of 1916.

45,700-Volt Equipment

The 3,500-kv-a., 12,000/45,700-volt, oil-insulated, water-cooled transformer supplied by the Canadian General Electric Co. as a spare unit was ready for operation on August 1st, 1915.

Totalling Wattmeter

Drawings were prepared and material ordered for the installation of a Staebler & Baker totalling wattmeter in this station to measure the entire incoming power. The purchase of the meter and installation work on same was done by the Operating Department.

Additional Pumping Equipment

One 600-gallon, single-stage centrifugal pump, manufactured by the Canadian Allis-Chambers Co., and direct connected to a 50 h.p., 575-volt induction motor, manufactured by the Canadian General Electric Co., Peterboro, was installed to increase the pumping capacity for handling the water for cooling the transformers, and has been in operation since September 26th, 1915.

Heating

The installation of twenty-two 10-k.w. electric heaters in this station to replace the steam heating was completed by January, 1915, and has been in successful operation since then.

Protection of Service

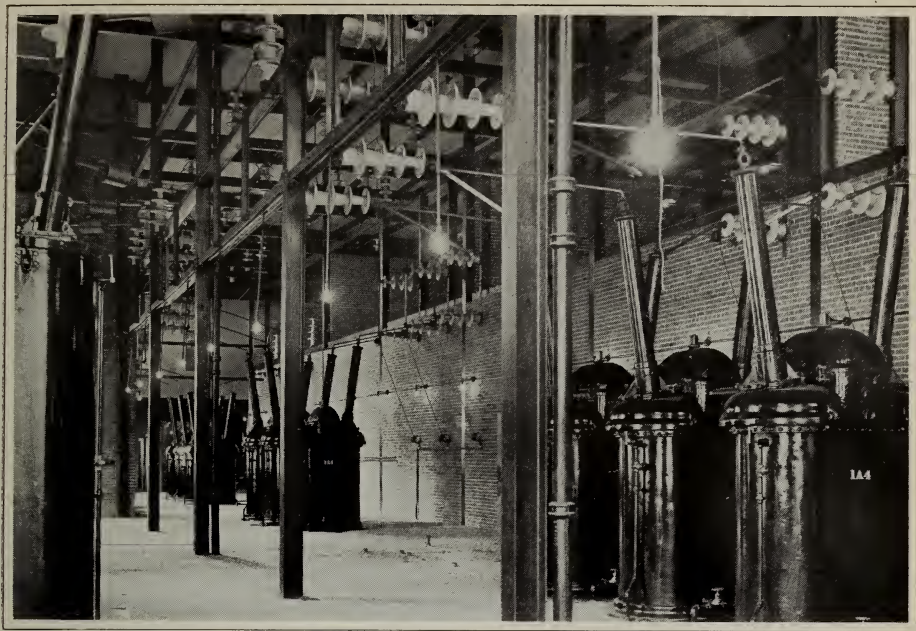
Conferences were held with the engineers of the Ontario Power Co. to discuss the installation of power-limiting reactors with the object of the betterment of the service and protection against serious damage.

The Electric Steel and Metals Company

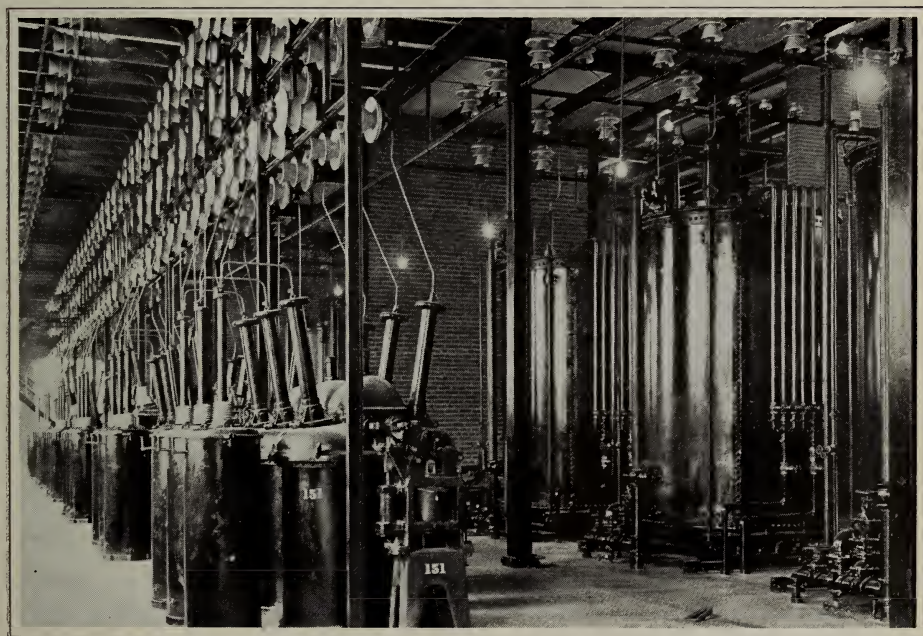
The sub-station at the plant of the Electric Steel & Metals Co. was placed in service on November 23rd, 1914.

Welland Municipal Station Extension

Three 150-kv-a 13,200/2,300-volt, single-phase, 25-cycle, oil-insulated, self-cooled transformers, manufactured by the Canadian General Electric Company, were installed in the sub-station located here, the necessary disconnecting switches, switchboard panels and wiring material purchased from the Canadian Westinghouse Company, being erected by the Commission's construction staff. This new bank of transformers operates in parallel with a bank of 3 175-kv-a., Packard Electric Company transformers, and was placed in service on April 18th, 1915.



110,000 Volt Switching Equipment—Niagara Transformer Station Extension



46,000 Volt Transformers and Switching Equipment—Niagara Transformer Station

Dundas Transformer Station

Additional Feeders

The work of installation of the two new 13,200-volt feeders referred to in the last report was completed by the Canadian Westinghouse Co. on December 19th, 1914. Pending completion of the new lines to Hamilton, these were not placed in service until October 14th, 1915.

Dundas Municipal Station

On March 14th, 1915, this station was placed in service. The construction of the building had been completed by the middle of January sufficiently for the Canadian Westinghouse Co. to proceed with their work. The apparatus belonging to the municipality in the Dundas transformer station was removed to this new station and the additional switching equipment required was purchased from the Canadian Westinghouse Co. for the municipality by the Commission. The two low-tension feeders out of this station have a maximum capacity of 300 kv-a each. These feeders, as well as supplying the town, furnish light and power to Ancaster and West Hamilton.

Waterdown Distributing Station

Owing to the falling off in the demand on the transformers in this station on account of war conditions, it was decided not to install the three 150 kv-a. transformers ordered for this station, but to leave the 3-75 kv-a. transformers in place for the present. The three 150 kv-a. transformers were disposed of to the Corporation of Welland.

Lynden Distributing Station

Instructions were received on June 28th covering the construction of a distributing station at Lynden, the primary voltage to be 13,200 volts, and the one feeder to be 100 kv-a. capacity at 4,000 volts "Y" connected with the neutral grounded, three 75 kv-a. transformers being installed for this purpose.

The contract for the building itself, which is a type E-1 station, was let to Mr. Thos. Hull, of Lynden, and the electrical equipment was installed by the Canadian Westinghouse Co. under their contract for ten standard stations. Power was first delivered from this station on October 22nd, 1915.

Toronto Transformer Station

Transformer Equipment

The three 2,500-kv-a., single-phase 63,500/13,200-volt, oil-insulated, water-cooled transformers, manufactured by the Canadian General Electric Co. for No. 3 bank of transformers were placed in operation on November 8th, 1914. Shortly after this it was decided to install another bank of transformers (No. 4 bank), and an order was placed on February 8th, 1915, with the Canadian General Electric Co. for three transformers similar to No. 3 bank. This will give a total rated capacity of 30,000 kv-a., with one spare transformer additional. This bank will be placed in service early in November, the high-tension bus extension having been placed in service on October 24th. The switching equipment for this new bank is similar to that supplied for No. 3 bank.

Additional Equipment

Owing to the increase in the load at this station, it has been decided to install another bank of transformers (No. 5 bank), and tenders have been asked for in this connection on three 2,500-kv-a. transformers with alternative on three of the largest kv-a. rating that can be installed in the space available, this being the last bank that can be installed in the existing building.

Storage Battery

Owing to the increased demands the storage battery capacity was increased, the original battery being removed and sixty Electric Storage Battery Company's E-9 cells being installed in its stead.

The field coils of the battery-charging motor generator set were replaced by new coils so as to obtain higher charging voltage.

Control Room

The control room in this building was enclosed so as to facilitate heating, and a bridge, over the transformer runway, which forms part of the floor of the operating room, was installed. This bridge is removable to permit the transformers to be taken along the runway.

Heating Transformers

The three 100-kv-a., 13,200/230/115-volt Packard transformers, referred to in the last report as being installed for the heating system, were ready for service on February 9th, 1915.

London Transformer Station

Building Extension

The extension (1914) to this station, referred to in the last report, was completed early in May, 1915, by Messrs. Hyatt Bros., of London.

Electrical Equipment

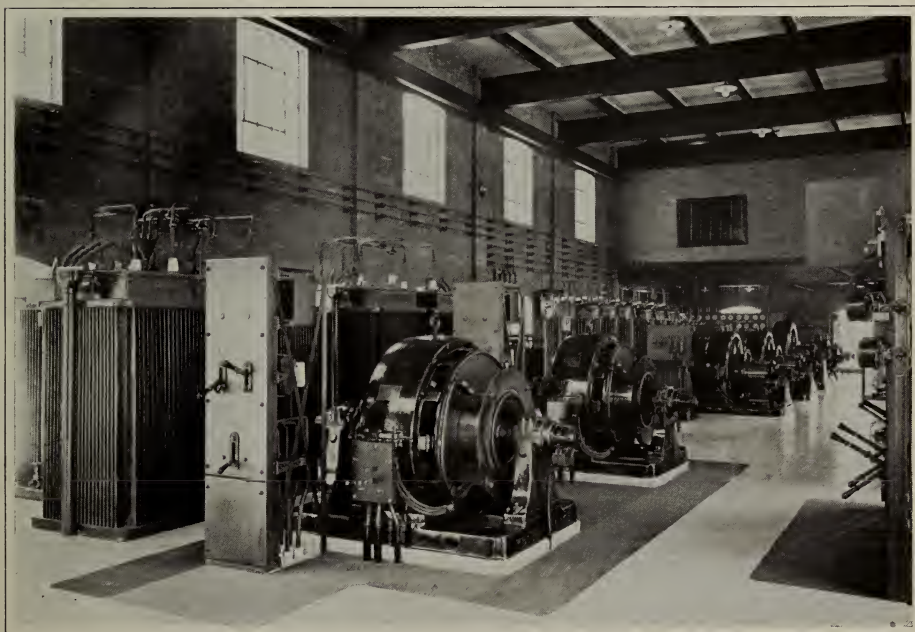
The three 1,250-kv-a. transformers forming bank No. 2 were installed by the Canadian General Electric Company, together with the 110,000-volt switching equipment for same. The contract for the low-tension switching equipment for this bank was awarded to the Canadian General Electric Company, and this equipment, together with that ordered previously for the two additional 13,200-volt feeders, was erected by the Commission's construction force. This No. 2 bank of transformers was placed in service on October 24th, 1915.

After No. 2 bank was placed in service the 13,200-volt oil switch for the low-tension side of No. 1 bank was installed by the Commission's construction men, and the Canadian General Electric Company installed paralleling reactors for this same bank. The Commission's men also re-arranged the switchboard panels and rewired same to correspond with the arrangement of apparatus in the station.

Three 110,000-volt bus sectionalizing switches were purchased from the Canadian General Electric Company and installed by the Commission's men in the 110,000-volt bus between the points where the incoming lines from St. Mary's and Woodstock connect to the bus. These permit the two banks of transformers in this station to be connected to separate sections of the bus, giving a more flexible arrangement.



Eugenia Falls, Generating Station



London Sub-station, Horton St.—Rotary Converter Equipment

Water Supply

An investigation into the transformer cooling water supply at this station during the spring showed that the supply was not adequate to supply the demands made on it. Experiments with the drainage system were conducted and permanent changes made, resulting in a sufficient supply for cooling purposes being obtained.

Strathroy Municipal Station

The installation of the three 75-kv-a., 13,200/2,300-volt transformers and switching apparatus, and of one 20 k.w. constant current transformer by the Canadian General Electric Co. was completed and this station placed in service on November 30th, 1914. The low-tension voltage in this station is 4,000 volts for four-wire, three-phase grounded neutral distribution.

Dorchester Distributing Station

The original station located here was of pole type construction of 75-kv-a. capacity, but owing to the importance of the increasing load it was decided to replace it with a type E-1 station to supply Thamesford, Thorndale and Dorchester. A lot was purchased, and Messrs. Wells & Gray were awarded the contract for the building and instructed to proceed on March 4th, and on the 5th of April the Canadian Westinghouse Co. were notified to commence installation of the apparatus, the station being placed in service June 20th, 1915. There are three 75-kv-a., 13,200/2,300-volt transformers installed in this station. The pole type equipment which was removed is now stored at London transformer station and will be used elsewhere. There are three 4,000-volt feeders out of this station.

Lucan Distributing Station

Contract was awarded for building a type E-1 station building at Lucan to Mr. George Bawden on November 4th, 1914. The station contains three Canadian General Electric Co. 75-kv-a., 13,200/2,300-volt transformers, with one 4,000-volt outgoing feeder from this station, this switching equipment being supplied by the Canadian Westinghouse Co. Work was completed and the station placed in service on January 21st, 1915.

Ailsa Craig Feeder

An additional panel for controlling the 4,000-volt feeder to Ailsa Craig was purchased in August from the Canadian Westinghouse Co. and installation was completed by them on September 23rd, 1915.

Delaware Distributing Station

Contract was awarded for a type E-1 station on December 10th, 1914, to Messrs. Wells & Gray, the work being completed by them on January 14th, 1915. The order for the switching equipment was placed with the Canadian Westinghouse Co. on December 10th, 1914, and for the 3-25 kv-a. transformers with the Packard Electric Co. on December 14th, 1914.

The primary voltage is 13,200 volts and the secondary 4,000 volts "Y" supplying three feeders of 70-kv-a. capacity each which feed the Municipalities of Delaware, Lambeth and Mount Brydges. This station was placed in service on February 1st, 1915.

Exeter Distributing Station

Contract for the construction of this station, which is a "D-1" type, was placed with Mr. P. Bawden of Exeter on October 28th, who is proceeding with the work. Tenders have been called for on the transformers and switching equipment and are now under consideration. It is proposed to install a bank of three 75-kv-a., 26,400/2,300-volt single-phase transformers here supplying one 210-kv-a. capacity feeder with provision for an additional feeder in the future.

London Utilities Commission

London and Port Stanley Railway

The installation of the equipment purchased from the Canadian Westinghouse Co. was advanced in the Horton St. station of the London Water and Light Commission sufficiently for operation on July 1st, 1915, and the installation completed by the end of August. All equipment was inspected at the factory and tested by the Commission's engineer before shipment.

The equipment consists of six 185-kv-a., 13,200/920-volt single-phase transformers in two banks, each being fed from a 13,200-volt bus through an automatic oil switch and each being connected, on the low-tension side, through a starting panel to a 500-kw. rotary converter. The converters feed into a 1,500-volt D.C. bus from which two 2,000-ampere maximum, 1,500-volt feeders are carried. The main switchboard consists of five panels, two controlling the A.C. and D.C. sides of the converters, one for measuring on recording meters the total D.C. output, and two panels for controlling the outgoing 1,500-volt feeders. Electrolytic arresters are provided for each feeder.

The two rotary converters are each rated at 500 kw. 920-volts A.C. to 1,500-volts D.C., compound wound with commutating poles. They are self-exciting at 1,500 volts and are guaranteed to carry 200 per cent. overload for five minutes and 300 per cent. overload for one minute. They are self-starting from the A.C. end, by connecting through the starting panel to low voltage taps on the transformers.

This equipment was installed by the construction force of the London Utilities Commission under the supervision of an engineer from the manufacturers and in accordance with the Commission's specifications.

Provision is made for the future addition of one rotary converter with metering and control apparatus and 1,500-volt D.C. feeders with panels to match those already installed.

Guelph Transformer Station

The high-tension and low-tension emergency busses mentioned in the last report, and the three additional 13,200-volt feeders, were completed on March 4th, 1915.

Contract was let for the construction of a galvanized steel storage shed at this station for general storage purposes. This is being erected by the A. B. Ormsby Co. of Toronto.

Central Prison Farm

The equipment here was completely installed in the permanent sub-station on February 15th, 1915, and the station has been in continuous operation since then. Power had previously been supplied from a temporary station.

Georgetown Distributing Station

Owing to the increase in the load at this station, it was deemed advisable to increase the transformer capacity, and 3-150 kv-a. transformers originally manufactured for Etobicoke Station by the Canadian General Electric Company were installed in place of 3-75 kv-a. Canadian Westinghouse Co. transformers which were removed to Elora Distributing Station. The new transformers were placed in service on December 8th, 1914.

Fergus Distributing Station

The one 75 kv-a. transformer installed temporarily at Elora Distributing Station was returned to this station, completing the bank of 3-75 kv-a. transformers here.

Elora Distributing Station

The three Canadian Westinghouse Company transformers of 75-kv-a capacity removed from Georgetown Distributing Station, were installed in this station on December 12th, 1914. The 75-kv-a. transformer belonging to Fergus Station was transferred to that station. About this time it was decided to change this station from 2,300-volt three wire low tension to 4,000-volts four wire grounded neutral and this work was carried out and completed by the Commission on February 18th, 1915.

Preston Transformer Station

A corrugated steel storage shed was purchased from the A. B. Ormsby Company, and is being installed here for general storage purposes.

Berlin Transformer Station

Electrical Equipment

On November 9th, 1914, a contract was closed with the Canadian General Electric Company for the supply of 3-1,250-kv-a., 63,500/13,200-volt transformers to be placed in the tanks then containing three Canadian General Electric Company 750-kv-a transformers. These were installed by the Commission and placed in service on September 19th, 1915, giving the station a present transformer capacity of 6,000 kv-a.

The switching equipment for this bank of transformers ordered in 1913, together with two 13,200-volt feeders, has been finally completed.

A shed for general storage purposes has been purchased and is being erected here by the A. B. Ormsby Company. This shed is of corrugated sheet steel.

Stratford Transformer Station

Electrical Equipment

The installation of switching equipment for the 3-1,250-kv-a., 63,500/26,400-volt Canadian Westinghouse Company transformers and for four 26,400-volt feeders, was permanently completed in August, 1915. Three 13,200-volt disconnecting switches have been purchased and will be installed by the Operating Department between the 750-kv-a. transformers and the 13,200-volt bus in the old installation as soon as the new bank of transformers is placed in service.

Listowel Distributing Station

A distributing station was authorized for Listowel, and after due consideration it was decided to install the equipment in the existing Municipal Station building. The electrical equipment which will consist of 3-100-kv-a., 26,400/2,300-volt transformers with one 350-kv-a 4,000-volt feeder will be installed by the Canadian Westinghouse Company under the contract with them covering equipment for ten standard stations. Provision will be made in the station for one future feeder. Type "G" equipment will be used, modified to suit the existing building.

Milverton Distributing Station

It was decided to construct a type "H" station here and tenders were called for in connection with the building, contract being let to Messrs. Wells & Gray on October 27th. It is proposed to install three single-phase 75-kv-a., 26,400/2,300-volt transformers with one 210-kv-a 4,000-volt feeder.

Tenders have been called for covering the supply and installation of the equipment in the building.

Harriston Distributing Station

Tenders have been called for covering the erection of a type "H" building and the installation of electrical equipment. Three 75-kv-a 26,400/2,300-volt transformers with one 4,000-volt 210-kv-a. feeder will be provided. The 12 k.w. constant current transformer at present in use at Harriston will be installed in this station and provision is being made for a future 4,000-volt feeder.

Palmerston Distributing Station

A type "H" building containing 3-75-kv-a., 26,400/2,300-volt transformers and one 210-kv-a 4,000-volt feeder with the necessary switching equipment is to be constructed here. Messrs. Wells and Gray were awarded the contract for the building on October 27th, 1915, and will proceed with the work at once. Tenders are being requested on the electrical equipment.

St. Marys Transformer Station

A corrugated sheet steel shed was purchased from the A. B. Ormsby Company and will be installed here for storage purposes.

Woodstock Transformer Station

A corrugated sheet steel shed was purchased from the A. B. Ormsby Company and will be erected here. This will be used for general storage purposes.

Embro Distributing Station

The installation of apparatus in this station was completed and the station placed in service on December 22nd, 1914. The transformers which were manufactured and installed by the Canadian General Electric Company are 75-kv-a 13,200/2,300-volt units. The switching and metering equipment was supplied and installed by the Canadian Westinghouse Company.

Woodstock, Thames Valley and Ingersoll Ry.

The installation of the rotary converter, transformers, switching and metering equipment in the power house of this railway was completed and the equipment placed in operation on February 9th, 1915. Three Canadian General Electric, Type "I" electrolytic lightning arresters were also installed and placed in service on July 19th, 1915, all the above work being done for the Railway Company by the Commission's construction staff.

St. Thomas Transformer Station

Extension 1914

Plans and specifications were prepared for the construction of a 70 ft. by 45 ft. addition to the present transformer station for the accommodation of additional 13,200-volt feeders and the necessary equipment for supplying power to the London and Port Stanley Railway and also for a second bank of 750-kv-a., 63,500/13,200-volt transformers with switching equipment. This extension is added on the south end of the original building and contains a 25 ft. by 40 ft. basement and a gallery 27 ft. by 40 ft. The type of construction is the same as in the original building. The operator's room, which is 8½ ft. by 10 ft. is situated at the southeast corner of the building, on the ground floor. The contract for the construction of this building extension was let to Messrs. Hyatt Bros., London.

Railway Siding

A siding was run in from the London and Port Stanley Railway near the station and considerably reduced the cost of haulage of material.

Electrical Equipment for Railway Supply

The electrical equipment installed to supply 1,500-volt power to the London and Port Stanley Railway consists of two banks each of three 185-kv-a 13,200/920-volt transformers fed through automatic oil switches from an extension of the 13,200-volt bus; two 500-kw. rotary converters 920 volts A.C. to 1,500 volts D.C., provided with compound winding and interpoles; and three feeder equipments, two of which are in use, the third being a spare.

Bus disconnecting switches were installed between the old 13,200-volt bus and the extension and the equipment was so laid out that the second bank of 110,000-volt transformers, when installed, will connect to this extension. Provision was also made on this bus extension for two 13,200-volt outgoing future feeders and for one future bank of transformers for a future converter.

Each converter is self starting from the A.C. end and is provided with its own starting panel equipped with double throw field switch and a double throw starting switch by means of which low voltage can be applied for starting the converter. The transformer banks are controlled by automatic oil switches on the high-tension side, operated from panels in the A.C. switchboard.

The D.C. 1,500-volt switchboard consists of six panels and is in line with, but separated a few feet from, the A.C. switchboard in the extension. Each converter is connected through its own panel equipped with automatic circuit breaker, knife switch and ammeter to the 1,500-volt bus. The entire D.C. output is measured on a 1,500-volt watt-hour meter and a 1,500-volt recording watt meter mounted on a totalling panel. The three 2,000-ampere feeder panels are each equipped with ammeter and automatic circuit breaker. Electrolytic lightning arresters are connected to the outgoing feeder conductors near the wall outlets. Indi-

ating volt-meters and a reactive factor meter are mounted on a swinging bracket at one end of this switchboard.

All the above equipment was supplied by the Canadian Westinghouse Company in accordance with specifications prepared by the Commission's engineers, who inspected and tested it in the factory. It was installed by the Commission's construction force under the supervision of an engineer from the manufacturers. The first converter was started up on June 20th and the second one on July 1st.

Additional Equipment

In addition to the above equipment a contract was placed with the Canadian General Electric Company for a panel and 13,200-volt oil switch for the low-tension side of the existing 110,000-volt transformer bank. This equipment has been delivered and has been partly installed by the Commission's men. A contract was also placed with the Canadian Westinghouse Company for the 110,000-volt and 13,200-volt switching equipment for No. 2 bank of 110,000-volt transformers and will soon be ready for shipment. This equipment, when delivered, will be installed by the Commission under the manufacturer's supervision.

It is proposed to move to St. Thomas, from Guelph Transformer Station, two 750-kv-a 63,500/13,200-volt General Electric Company transformers and install them with the existing spare unit at St. Thomas to make a complete second bank of transformers, duplicates of the existing bank. This work of moving the transformers will be done by the Commission's Maintenance Department.

St. Thomas Hydro-Electric Commission Station

Plans and specifications for the construction of a new municipal station are being prepared at the present time at the request of the local Commission. This station will take the place of the present municipal station on Gas St. New power transformers will be installed and the existing equipment removed to the new station and remodelled.

Three 50-kv-a transformers, formerly installed in the Commission's Transformer Station and supplying the St. Thomas Waterworks Department, were cut out of service, the Waterworks now being supplied from the local distribution system.

Dutton Distributing Station

Contract for this station was awarded to Mr. Wm. Saunders of Dutton for the construction of a type "E-1" station building at Dutton. The equipment, which consists of one bank of 75-kv-a 13,200/2,300-volt transformers and one 140-kv-a 4,000-volt feeder was installed by the Canadian Westinghouse Company under their contract covering equipment for ten standard stations, and was placed in service on August 27th, 1915.

Cooksville Transformer Station

A corrugated sheet steel shed was purchased from the A. B. Ormsby Company and will be used for general storage purposes.

Mimico Distributing Station

The installation of the additional feeder in this station, mentioned in the last report, was finally completed on May 1st, 1915, and has been placed in operation.

Woodbridge Distributing Station

The equipment, mentioned in the last annual report as being installed, was placed in permanent service on December 2nd, 1914.

Etobicoke Distributing Station

Three 150-kv-a., 13,200/2,300-volt transformers with switching equipment for two 400-kw. 2,300-volt feeders were ordered from the Canadian General Electric Company, but, it being decided not to build this station, the transformers on completion were transferred to Georgetown, and the switching equipment is being held to our order in the factory.

Brant Transformer Station

Three 50-kv-a 220/2,200-volt Canadian Crocker-Wheeler transformers were installed in this station for feeding St. George, as described below under St. George Distributing Station.

Brantford Hydro-Electric System

Several pieces of apparatus which were purchased by the Brantford Hydro-Electric System during the year were tested by the Commission for them in the factories of the manufacturers, and reports made thereon. These included three 75-kv-a transformers, Canadian Westinghouse, one 750-kv-a, 3 phase, 26,400/4,000-volt Canadian Crocker-Wheeler Company transformer and two sets of Canadian Westinghouse Company 200 k.w. 600-volt, D.C. 750 r.p.m. interpole generators, each direct connected to a 300 h.p. 4,000-volt, 25 cycle, 750 r.p.m. synchronous motor with direct connected 3.5 k.w. 125-volt exciter.

Waterford Distributing Station

Contract for the building of a type "H" station at this place was let to Messrs. Wells & Gray. The three 75-kv-a 26,400/2,300-volt transformers and switching equipment mentioned in the last Report were installed, and ready for service on February 2nd, 1915. It was later decided to change the low-tension voltage to 4,000 volts, which was done, and the station placed in permanent operation on March 10th, 1915.

Drumbo Distributing Station

This station, which has feeders supplying Drumbo, Plattsville and Princeton, is a type "H" station, and was placed in service on December 1st, 1914. The equipment is described in the last Annual Report.

Ayr Distributing Station

This station, which supplies the Municipality of Ayr at a voltage of 4,000 was placed in service on December 1st, 1914. The equipment is described in the last Annual Report.

St. George Distributing Station

As a semi-permanent arrangement three 50-kv-a 220/2,200-volt Crocker-Wheeler Company transformers have been installed in Brant Transformer Station with switching apparatus for stepping up the voltage from the Brant Station service bus from 220 to 4,000 volts "Y" for the St. George feeder. This equipment

was ready for service on August 13th, 1915, and will be used until such time as the load at St. George warrants a station being built there.

Simcoe Municipal Station

The standard type "G" station referred to in the previous report and the electrical equipment installed by the Canadian Westinghouse Company was placed in service on March 9th, 1915. Two 15 k.w. Adams Bagnall constant current transformers with panels, purchased by the Municipal Department from A. H. Winter Joyner, Limited, were installed together with the necessary wiring material by the Commission's Construction force.

Burford Distributing Station

Contract for the construction of a type "H" station here was let to Messrs. Wells and Gray on December 9th, 1914. The electrical equipment consists of three 75-kv-a 26,400/2,300-volt transformers with one 70-kv-a 4,000-volt feeder. The contract for the supply and installation of the electrical equipment was placed with the Canadian Westinghouse Company on December 30th, 1914, and the station was ready for operation on April 15th, 1915.

Kent Transformer Station

A sprinkling tank for cooling the water for the transformer cooling system has been installed, the work being done by Messrs. Wells and Gray. This tank is built of concrete and is 40 feet square and six feet deep.

The transformers in this station were placed in service on November 1st, 1914. In order to supply temporary power to the Chatham Hydro-Electric System, pending completion of their Municipal Station, the three 100-kv-a 26,400/575-volt station transformers in this station were reconnected to deliver 4,000 volts over a temporary feeder. To supply the 575-volt circuits in the station, service transformers loaned by the Chatham Hydro-Electric System were used. This temporary 4,000-volt arrangement was placed in operation on Jan. 15, 1915, and discontinued when the new municipal station was placed in service, the two 26,400-volt feeders to this station being placed in service on Sept. 26, 1915, the other two feeders supplying different stations having been placed in service on Feb. 3 and March 3, respectively.

Chatham Hydro-Electric System

Specifications for the building of a combined office and sub-station for the Chatham Hydro-Electric System were prepared and tenders called for. These tenders were submitted to the local Commission, who awarded the contract to Mr. B. Blonde of Chatham.

The contract for the 750-kv-a power transformers was awarded to the Canadian General Electric Company, and these were inspected and tested at the factory by the Commission's Engineer. Specifications for the constant current transformers and the complete switching equipment were issued and the Canadian General Electric Company was awarded the contract for same.

Building

The building has a frontage of 43 feet and a length of 61 feet, the portion of the ground and second floors partitioned off for offices being 40 feet by 30 feet. With a view to utilizing the windows for display purposes, two large plate glass windows are placed on either side of the door, a simple design of cut stone trim around the doors and windows being utilized to improve the appearance of the front.

Electrical Equipment

The electrical equipment is located to the rear of the offices, in the basement and on the first and second floors, the area of each being about 28 feet by 40 feet. The two incoming 26,400-volt lines enter the building on the second floor and connect through choke coils, disconnecting switches, automatic oil switches with series trip relays, and another set of disconnecting switches to the 26,400-volt bus, which is sectionalized by disconnecting switches. The 26,400-volt leads to the transformers, which are on the main floor, run from the bus through disconnecting switches to the 750-kv-a., 3-phase, 26,400/4,000-volt transformers.

The 4,000-volt leads from the transformers are carried in conduit to oil switches on the switchboard. The feeder panels comprise three 3-phase, 4,000-volt, 500-kv-a. power feeders, one 3-phase, 4,000-volt, 250-kv-a. feeder to the constant current transformer bus, five single phase 28 kw. 6.6 amp., series street lighting feeders, three 4,000-volt, 3-phase, 200-kv-a. commercial lighting feeders and one service transformer feeder. Provision is made for installation in the future of the following additional feeders:—three 3-phase power feeders, one series street lighting feeder and one voltage regulator circuit. The street lighting feeders are supplied from five 28 kw. 6.6 ampere, 2,300-volt constant current transformers. The station service circuits are supplied by three 5-kv-a., 2,200/220/110-volt transformers.

This station was placed in service on September 26th, 1915.

Wallaceburg Distributing Station

Contract for the construction of this station was let to Messrs. Wells and Gray. Canadian General Electric Company transformers and Canadian Westinghouse Company high-tension arrester, and switching equipment were installed and the station placed in service on February 9th, 1915. Two constant current transformers of 10 and 16-kv-a. capacity, 6.6 ampere, 2,300-volt, with the necessary switchboard have also been installed here by the Commission for the Municipality and are now in operation.

Bothwell Distributing Station

A type "H" station building was built here, under contract, by Messrs. Wells and Gray and the Canadian Westinghouse Company, under their contract for equipment for ten standard stations, installed the electrical apparatus which consists of three 75-kv-a., 26,400/2,300-volt single-phase transformers with one 4,000-volt feeder. This station was placed in service on August 17th, 1915.

Thamesville Distributing Station

Contract for the construction of a type "H" station building was awarded to Messrs. Wells and Gray. The electrical equipment supplied and installed by the Canadian Westinghouse Company under their ten standard stations contract consists of three 75-kv-a., 26,400/2,300-volt transformers with one 100-kv-a. feeder. This station was placed in service on September 14th, 1915.

Ridgetown Distributing Station

Mr. Watson Taylor, Ridgetown, received the contract for the construction of the building for this station, which is type "H-1." The electrical equipment consisting of three 75-kv-a., 26,400/2,300-volt transformers, two 4,000-volt feeders for Ridgetown and Highgate of 140-kv-a. and 100-kv-a. capacity respectively is being

installed by the Canadian Westinghouse Company under their ten standard station contract. In addition to the above, one 22 kw., 6.6 amp., 2,300-volt constant current transformer and switchboard, with a time switch, have been purchased for the Municipality and will be installed by the Commission. The contract for the panel was awarded to Messrs. A. H. Winter Joyner, Ltd., and for the transformer to the Northern Electric Company, who are supplying an Adams-Bagnall transformer. It is expected that this station will be placed in operation very shortly.

Blenheim Distributing Station

Mr. Cookson of Blenheim received the contract for the construction of a type "H" station building, and the Canadian Westinghouse Company installed the electrical equipment as covered by their standard station contract.

This equipment consists of a 4,000-volt, 140-kv-a. feeder supplying Blenheim, three 75-kv-a., 26,400/2,300-volt transformers and was placed in service on October 20th, 1915. A 22 kw. Adams-Bagnall constant current transformer for the Municipality has been ordered from Northern Electric Company and a switchboard panel for same from Messrs. A. H. Winter Joyner, Ltd., and will be installed by the Commission in a short time.

Petrolia Distributing Station

Contract for the construction of a station building here was let to Messrs. Wells and Gray on October 27th, 1915, the station to be an enlarged type "G" to accommodate two incoming 26,400-volt lines and one bank of three 150-kv-a., 26,400/2,300-volt transformers. The 26,400-volt lines will run to a common bus through disconnecting switches, an oil switch being placed between this bus and the transformers. A 26,400-volt electrolytic lightning arrester will be connected to this bus. Tenders are now under consideration for this equipment. There will be four feeders belonging to the Municipality of Petrolia, one for commercial lighting, one for power and two for street lighting, controlling two 16 kw., 6.6 ampere, 2,300-volt Adams-Bagnall constant current transformers already purchased for the Municipality by the Commission. A 4,000-volt feeder will be installed to supply Wyoming.

Dresden Distributing Station

It was decided to remodel the existing municipal power-house building to house the new equipment referred to in the last annual report. This equipment was installed by the Canadian Westinghouse Company and the station was placed in service on March 31st.

A 10 kw., 6.6 ampere, 2,300-volt Adams-Bagnall constant current transformer and panel ordered from Messrs. A. H. Winter Joyner Ltd. by the Commission for the Municipality has been installed by the Commission's construction force in this station for street lighting and has been placed in service.

Tilbury Distributing Station

Mr. H. G. Wynes of Collingwood received the contract for the construction of the building for this station. The Canadian Westinghouse Company installed the switching equipment and the Canadian General Electric Company installed the three 100-kv-a. transformers referred to in the last Annual Report. The station was placed in service on December 1st, 1914.

Essex Transformer Station

The low voltage heat, light and power circuits in this station have been completed and connected up to the various pieces of apparatus in the station.

The 2-inch pipe line from the water main on Walker Road was also completed early in the year.

Walkerville Hydro-Electric System

The installation of the wiring for the 50-kv-a., C.G.E. induction type voltage regulator and its panel was completed by the Canadian Westinghouse Company and the regulator was placed in service on February 8th, 1915.

In the last Annual Report, the names of the manufacturers who supplied the 750-kv-a. transformers to this station and to Windsor Municipal Station were interchanged. The transformers in Walkerville Municipal Station are of Canadian General Electric manufacture.

Windsor Hydro-Electric System

The 90-kv-a. induction type voltage regulator and panel were installed and placed in operation on January 31st, 1915. A third 750-kv-a., 3-phase, 26,400/4,000-volt water-cooled transformer bought from the Canadian Crocker-Wheeler Company was installed by them and will be placed in service in a short time. The Canadian Westinghouse Company were awarded the contract for the necessary additions to the switching equipment for the control of this transformer, consisting of 26,400-volt connections and disconnecting switches, 4,000-volt connections to the transformer panel, switchboard instruments and wiring to the 4,000-volt bus.

An additional set of potential transformers for the 4,000-volt bus was purchased from the Canadian Westinghouse Company for the local Commission and installed by them.

An additional 28 kw., 6.6 ampere, 2,300-volt constant current transformer was ordered for the local Commission from the Canadian Westinghouse Company together with the panel and necessary wiring material. This was installed by the manufacturer and brings the total number of these transformers installed up to 13.

In the last Annual Report the names of the manufacturers who supplied the 750-kv-a. transformers to this station and to Walkerville Municipal Station were interchanged. The Canadian Crocker-Wheeler Company were the manufacturers of the 750-kv-a. transformers in this station.

WASDELL'S FALLS SYSTEM

Wasdell's Falls Generating Station

Final acceptance tests were made on the two 400-kv-a., 2,300-volt, 60-cycle, three-phase, Swedish General Electric Company generators and their exciters on November 17, 1914, by representatives of the Swedish General Electric Company in the presence of one of the Commission's engineers.

Beaverton Distributing Station

No developments.

Cannington Distributing Station

No developments.

SEVERN SYSTEM**Barrie Distributing Station**

The additional 22,000-volt switching equipment for the second incoming line purchased from the Canadian General Electric Company was installed by the Commission and placed in operation on January 11th, 1915.

Collingwood Distributing Station

The additional 22,000-volt switching equipment for the second incoming line purchased from the Canadian General Electric Company was installed by the Commission and placed in service during November, 1914.

Waubaushe Distributing Station

This station was tested out on November 12th, 1914, and placed in service the following day.

Port McNicoll Distributing Station

This station was placed in service on December 3rd, 1914.

Midland Distributing Station

Owing to the opportunity of using at Owen Sound Distributing Station the three 550-kv-a., 22,000/2,300-volt Westinghouse transformers which were in this station when it was taken over by the Commission and which were not fully loaded, tenders were called for three 150-kv-a., 22,000/2,300-volt transformers to replace them. The contract was awarded to the Canadian Maloney Company, who installed the transformers and the three 550-kv-a. transformers were removed by the Commission and shipped to Owen Sound on Oct. 9th, 1915. The necessary changes in the switching equipment for the above were made by the Commission's men.

EUGENIA SYSTEM**Eugenia Falls Generating Station****Electrical Equipment**

The construction of this station is now completed and final tests are being made on the apparatus preliminary to placing the station in service.

The electrical apparatus consists of the two generators rated at 1,200 kw. at 85 per cent. power factor as described in the last Annual Report, provided with direct connected exciters each capable of exciting two generators; three 900-kv-a., 4,000/22,000-volt water-cooled transformers, three 50-kv-a., 4,000/575-volt station service transformers; two 22,000-volt outgoing feeders; two 4,000-volt outgoing feeders; and switching equipment for all of the above.

The contract for the transformers and switching equipment was awarded to the Canadian Westinghouse Company and this equipment was installed by them at the same time as the generators were installed.

There is a single 22,000-volt bus, and a single sectionalized 4,000-volt bus, both arranged for future extension. Disconnecting switches are provided between busses and oil switches.

The outgoing lines are equipped with automatic oil switches. The 22,000-volt lines are protected by electrolytic lightning arresters while multigap arresters are used on the 4,000-volt lines. The two 22,000-volt lines after passing through the wall outlets are divided at an outdoor switch structure, two circuits going to Owen Sound through Chatsworth, two going to Mount Forest through Durham, and one going to Dundalk and Chesley. The two 4,000-volt lines feed respectively the

Towns of Markdale and Flesherton. A 4,000-volt feeder runs to the 50-kv-a. station service transformers, and from the low tension side of these transformers, the station lighting, power and heating circuits are supplied through a distributing panel. These transformers also supply circuits to the surge tank and head works house for heating and lighting. A storage battery with charging motor generator set is provided to supply control current for all oil switches which are electrically operated, and for the governor motors and recording instrument control coils.

The wiring diagram for this station is shown in the attached cut.

Building

Specifications for the superstructure of the building for this station were prepared and tenders called. The contract was awarded to Mr. John Hayman, on Nov. 26th, 1914, who completed the work sufficiently for the electrical Contractor to start installation work by the first of June.

The superstructure is of red pressed brick with concrete roof supported on steel beams. The window sashes are of steel. A gallery floor is provided for the 22,000-volt switches, arresters and bus.

The building is 38 feet by 56 feet, inside dimensions, and is 31 feet high to the roof. A travelling crane of eight ton capacity was installed for handling the equipment during installation and to facilitate repairs and inspection.

Future Extension

The present building and equipment are so arranged that an extension can be made when the load on this station warrants increasing the capacity. The future equipment will include additional generators with exciters, more 22,000-volt feeders, a second bank of power transformers and switching equipment for the above, similar to that now installed.

Oil, Air and Water System

Two centrifugal pumps, bought from the Canadian Allis-Chalmers Company, of fifty gallons per minute capacity, each direct connected to a 5 h.p. Canadian General Electric Company induction motor, have been installed for water-cooling purposes. One Ingersoll Rand single-acting air compressor of 45 cubic feet free air per minute capacity for the air pressure system has also been installed. The oil storage is taken care of by the installation of two tanks of about 350 gallons capacity each, which are piped to the transformers.

Heating System

The heating is done by electric heaters at 575 volts, the heaters themselves being of 10 kw. capacity and manufactured by the Commission. Five of these heaters are located at the surge tank and three in the gate house. The generating station itself will also be heated by electric heaters suitably placed.

Markdale Municipal Section

With the authority of the Corporation of Markdale, the Commission has purchased from the Northern Electric Company a switchboard panel and a 12 kw., 6.6 ampere; 2,300-volt, 60-cycle constant current transformer of Adams-Bagnall Company manufacture. The Commission is also purchasing for the Corporation, the necessary wiring material for the installation of the above in the Markdale Town Hall, to supply the street lighting system. This equipment when delivered will be installed for the Corporation by the Commission's Construction Staff.

Owen Sound Distributing Station

Building

Messrs. Grier and Lethbridge of Owen Sound received the contract for the combined office and station building at this place. This building is 40 feet by 62 feet, with office space on the first and second floors of 38 feet by 29 feet. A basement is provided under the remainder of the building, and the first and second floors, with the exception of the space used for offices, are used for the electrical equipment.

The front of the building is finished in cut stone and brick with an entrance suiting the character of the building, a plate glass show window being placed on either side of the door. This building is located adjacent to the existing municipal generating station.

Commission's Equipment

The switching equipment, the contract for which was placed with the Canadian Westinghouse Company, consists of two incoming 22,000-volt lines which connect to a bus after passing the 22,000-volt oil switches. From this bus one feeder runs to the bank of three 550-kv-a., 22,000/2,300-volt oil insulated water-cooled transformers transferred from Midland Distributing Station and provision is made for a similar connection to a future bank of transformers. Metering equipment is provided for measuring the power at the 2,300-volt bus. All this equipment was purchased for and installed by the Commission.

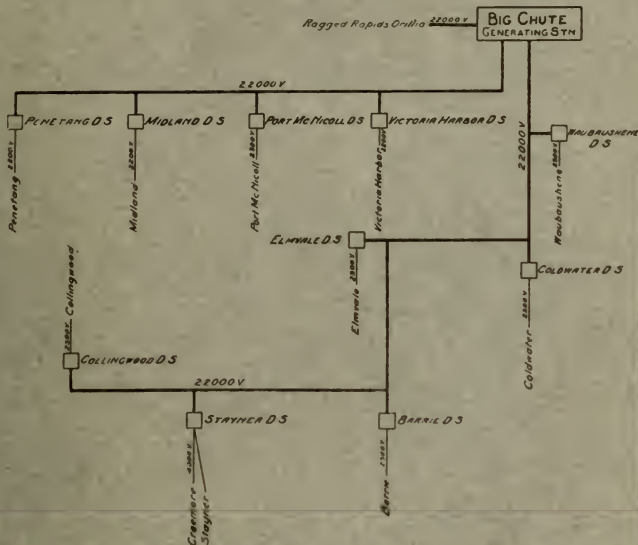
Municipal Equipment

With the approval of the Corporation of Owen Sound, the Commission purchased and installed the 2,300-volt bus and the two 2,300-volt feeders, one 2,300-volt commercial lighting feeder, and one 2,300-volt street lighting feeder. This equipment was purchased from the Canadian Westinghouse Company along with the Commission's own equipment. At the request of the Corporation the Commission is moving the two existing generator panels from the generator room and mounting them in line with the new switchboard and installing new cables to connect the generators to the 2,300-volt bus, and is also moving the existing street lighting constant current transformers and the 2,200/550-volt power transformers to the new building. All outgoing feeders will be carried out in lead-covered underground cable. The two existing generators are rated at 375-kv-a. and 400-kv-a., respectively. Provision is made for additional future feeders to be installed when required, also for the future installation of a voltage regulator and for additional constant current transformers.

This station will be ready to be placed in operation as soon as the Eugenia system is placed in service, which will be early in November.

Chatsworth Distributing Station

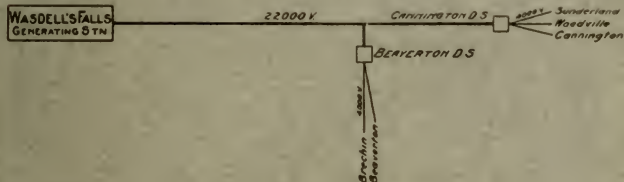
Contract was let to Messrs. Wells and Gray for the construction of a type "H" station building here. The Canadian General Electric Company was awarded the contract for the equipment controlling a 22,000-volt incoming line supplying a bank of three 25-kv-a., 22,000/2,300-volt transformers and the necessary metering, switching and protective apparatus, for one outgoing 70-kv-a., 4,000-volt feeder. This station will be ready for service in November.



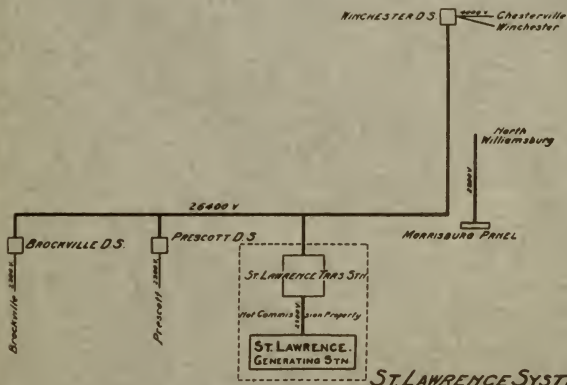
SEVERN SYSTEM.



EUGENIA SYSTEM.



WASDELL'S FALLS SYSTEM.



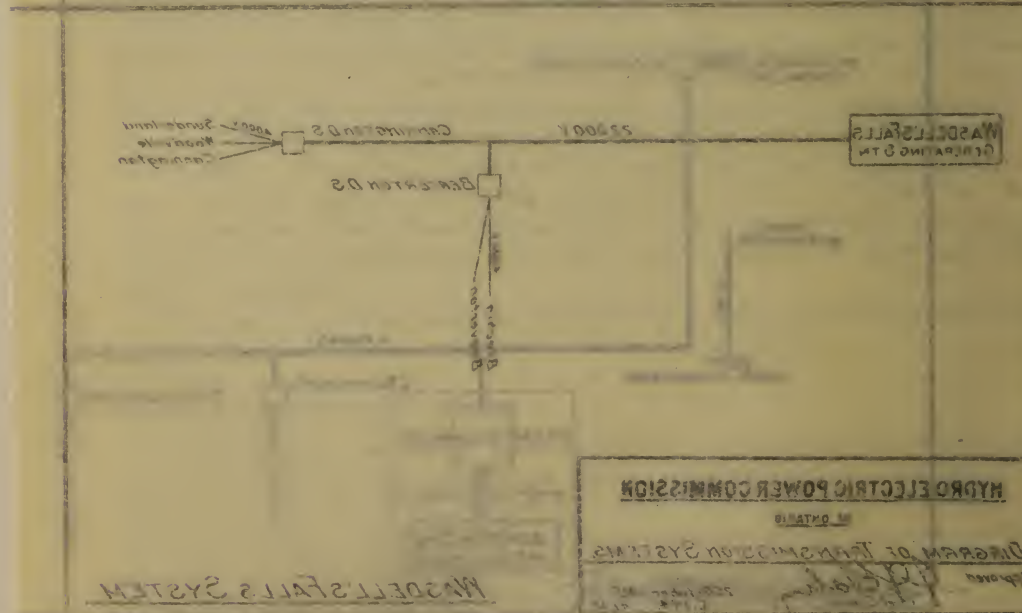
ST. LAWRENCE SYSTEM.

HYDRO-ELECTRIC POWER COMMISSION

OF ONTARIO

DIAGRAM OF TRANSMISSION SYSTEMS.

Approved: *[Signature]* 25 October 1915
Chief Engineer C. 124 61.24



Chesley Distributing Station

This station building will be constructed by Messrs. Wells and Gray and will be type "G." One incoming line will be provided at present but the second can be added easily when required. The electrical equipment is being manufactured by the Canadian General Electric Company and is the standard "G" station equipment. The three transformers are rated at 100-kv-a., 22,000/2,300-volts, 60 cycle. There is one 4,000-volt feeder of 280-kv-a. capacity. 22,000-volt multigap arresters are included in the equipment for this station. Construction work is just commencing on this station.

Durham Distributing Station

Contract for a type "H" station building here was placed with Messrs. Wells and Gray and that for the electrical equipment with the Canadian General Electric Company. This station has one incoming 22,000-volt line and the transformer bank is composed of three 75-kv-a., 22,000/2,300-volt, 60-cycle transformers. One outgoing 4,000-volt feeder to Durham is provided. The equipment for an additional 4,000-volt feeder to supply the Village of Holstein has been ordered and will be installed by the Canadian General Electric Company. There has also been ordered from the same Company a 10 kw., 6.6 ampere, 2,300-volt, 60-cycle constant current transformer and panel for the Corporation of Durham to supply the Durham street lighting demands. This station will be placed in service in November.

Dundalk Distributing Station

A type "H" station building was constructed here under contract by Mr. A. C. McDonnell, of Dundalk. The electrical layout is the same as for Durham, the transformers being of 75-kv-a. capacity. One 4,000-volt feeder will supply Dundalk. This station also will go into operation in November. The Canadian General Electric Company supplied and installed the electrical equipment.

Mount Forest Distributing Station

Mr. C. Patton, Mount Forest, received the contract for a type "G" station building here. The electrical equipment, which is the same as for Chesley Distributing Station, was supplied by the Canadian General Electric Company under contract. This station will be placed in operation as soon as the Eugenia System is in service. A 20 kw., 6.6 ampere, 2,300-volt, 60-cycle constant current transformer and panel has been purchased for the Corporation from the Canadian General Electric Company and is being installed by them. This will be used for street lighting purposes.

ST. LAWRENCE SYSTEM

Brockville Distributing Station

Plans were prepared for an extension to the Corporation's generating station. The work was done under the supervision of the Brockville Light and Power Department in conjunction with the Commission's construction staff.

The contract for three 200-kv-a., 26,400/2,300-volt, 60-cycle transformers had already been awarded to the Canadian General Electric Company. Tenders were called for on the switching equipment and the contract was awarded to the Canadian Westinghouse Company. The equipment provides for one incoming 26,400-volt line with provision for an additional line in the future. An electrolytic lightning arrester and type "E" hand-operated oil switch—with series I.T.L. relays—protect and control the high tension supply. The transformers are connected to the 2,300-volt bus on the existing switchboard through an automatic oil switch and

provision is made for synchronizing between the transformers and the generators in the existing power house.

The existing generating equipment consists of two three-phase, 375-kv-a., 2,300-volt, 60-cycle, Swedish General Electric Company generators direct connected to Belliss and Morcom compound steam engines of 450 h.p. rating.

Power was first supplied to Brockville through the new equipment on April 24th, the station, however, having been placed in service on April 4th for temporary supply of power, from the above generators to the Commission's St. Lawrence System pending changes being made by the Rapids Power Company at Morrisburg and Iroquois.

Williamsburg Distributing Station

Williamsburg Feeder

A standard feeder panel for supplying Williamsburg at 2,200 volts, 3-phase, 60-cycles has been installed temporarily in the Morrisburg Station of the Rapids Power Company. This was manufactured by the Canadian Westinghouse Company, and placed in service in May, the installation being done by the Commission's Operating Department.

SOUTH FALLS SYSTEM

South Falls Generating Station

The enlargement of the existing generating station on the Muskoka River at South Falls having been authorized, plans and specifications are being prepared for the necessary extension to the superstructure of the existing building and for the electrical equipment required.

At present there is one 450-kv-a. Allis-Chalmers-Bullock generator operating at 6,600 volts, 3-phase, 60-cycles, with a belted exciter and switchboard. It is proposed to purchase and install another generator rated at 750-kv-a., 3-phase, 6,600-volt, 60-cycles, for direct connection to the turbine shaft; a motor driven exciter; three 400-kv-a., 6,600/22,000-volt transformers; three 30-kv-a., 6,600/220/110-volt service transformers; the necessary switching equipment for the above and for two outgoing 22,000-volt lines and four outgoing 6,600-volt lines, and for station service feeders.

The plans will provide for a future extension of the building when load conditions require it.

Specifications on the 750-kv-a. generator and exciter have already been issued and tenders are now being considered. It is expected that the additional equipment for this station will be placed in operation during the coming spring, to supply power to Huntsville at 22,000 volts and to Bracebridge and Gravenhurst at 6,600 volts.

Huntsville Distributing Station

The construction of a distributing station at Huntsville has been authorized and the preliminary work is now being done. It is proposed to construct a modified Type "G" station and install three 300-kv-a., 22,000/2,300-volt, 60-cycle, single phase transformers with switching and protective equipment for one incoming 22,000-volt line and for two outgoing 2,300-volt feeders to Huntsville. Provision will be made for the future installation of equipment for a second incoming 22,000-volt line and for the Corporation's constant current transformers to supply their street lighting system, also for additional 2,300-volt feeders. The building will be of sufficient size to accommodate three 500-kv-a. transformers.

Table No. 1
CAPACITIES OF TRANSFORMERS INSTALLED OR ORDERED FOR COMMISSION'S STATIONS*
Total Capacity, 236,725 Kv-a.

Station	Voltage	Transformers Installed		Transformers Ordered		Total Station Capacity Kv-a.	System Capacity Kv-a.
		Mfr.	Kv-a.	Mfr.	Kv-a.		
NIAGARA SYSTEM.							
1. Niagara Transformer Station	25-Cycle					.....	.....
	12,000—110,000	C. W. Co.	66,500	C. W. Co.	10,500	.....	.....
2. Dundas Transformer Station	12,000—45,700	C. G. E. Co.	24,500	C. G. E. Co.	.....	101,500	.....
Caledonia Dist. Station	110,000—13,200	C. G. E. Co.	7,500	C. G. E. Co.	.....	7,500	.....
Watertown “	13,200—2,300	P. T. Co.	450	P. T. Co.	.....	450	.....
Hagersville “	13,200—2,300	C. C. W. Co.	225	C. C. W. Co.	.....	225	.....
Lynden “	13,200—4,000	C. W. Co.	225	C. W. Co.	.....	225	.....
3. Toronto Transformer Station	13,200—4,000	C. W. Co.	225	C. W. Co.	.....	225	.....
4. London Transformer Station	110,000—13,200	C. G. E. Co.	32,500	C. G. E. Co.	.....	32,500	.....
Dorchester Dist. Station	110,000—13,200	C. G. E. Co.	8,750	C. G. E. Co.	.....	8,750	.....
Lucan “	13,200—4,000	C. W. Co.	225	C. W. Co.	.....	225	.....
Delaware “	13,200—4,000	C. G. E. Co.	225	C. G. E. Co.	.....	225	.....
Burford “	13,200—4,000	P. E. Co.	75	P. E. Co.	.....	75	.....
5. Guelph Transformer Station	26,400—4,000	C. W. Co.	225	C. W. Co.	.....	225	.....
Acton Dist. Station	110,000—13,200	C. W. Co.	3,000	C. W. Co.	.....	3,000	.....
Georgetown Dist. Station	13,200—2,300	S. Co. of C.	225	S. Co. of C.	.....	225	.....
Rockwood “	13,200—4,000	C. G. E. Co.	450	C. G. E. Co.	.....	450	.....
Cheltenham “	13,200—2,300	C. G. E. Co.	75	C. G. E. Co.	.....	75	.....
Fergus “	13,200—575	C. G. E. Co.	225	C. G. E. Co.	.....	225	.....
Elora “	13,200—2,300	C. G. E. Co.	225	C. G. E. Co.	.....	225	.....
6. Preston Transformer Station	13,200—4,000	C. W. Co.	225	C. W. Co.	.....	225	.....
Breslau Dist. Station	110,000—6,600	C. G. E. Co.	3,000	C. G. E. Co.	.....	3,000	.....
7. Berlin Transformer Station	6,600—2,300	C. W. Co.	225	C. W. Co.	.....	225	.....
New Hamburg Dist. Station	110,000—13,200	C. G. E.	6,000	C. G. E.	.....	6,000	.....
Baden “	13,200—2,200	P. E. Co.	225	P. E. Co.	.....	225	.....
Elmira “	13,200—4,000	P. E. Co.	225	P. E. Co.	.....	225	.....
8. Stratford Transformer Station	13,200—4,000	C. W. Co.	225	C. W. Co.	.....	225	.....
Listowel Dist. Station	{ 110,000—13,200	C. G. E. Co.	3,000	C. G. E. Co.	.....	3,000	.....
Tavistock “	26,400—4,000	C. W. Co.	5,000	C. W. Co.	.....	8,000	.....
9. St. Mary's Transformer Station	13,200—4,000	.....	.....	C. W. Co.	300	300	.....
St. Mary's Cement Dist. Station	110,000—13,200	C. G. E. Co.	3,000	C. W. Co.	225	225	.....
	13,200—575	C. G. E. Co.	1,500	C. G. E. Co.	.....	3,000	.....
		C. G. E. Co.	1,500	C. G. E. Co.	.....	1,500	.....

* Spare transformers are included.

Table No. 1—Continued
CAPACITIES OF TRANSFORMERS INSTALLED OR ORDERED FOR COMMISSION'S STATIONS*—Continued

Total Capacity, 236,725 Kv-a.

Station	Voltage	Transformers Installed		Transformers Ordered		Total Station Capacity Kv-a.	System Capacity Kv-a.
		Mfr.	Kv-a.	Mfr.	Kv-a.		
10. Woodstock Transformer Station	110,000—13,200	C. G. E. Co.	3,000	.....	.....	3,000	
Beachville Dist. Station	13,200—2,300	S. Co. of C.	150	.....	.....	150	
Norwich "	13,200—2,300	S. Co. of C.	150	.....	.....	150	
Embro "	13,200—4,000	C. G. E. Co.	225	.....	.....	225	
11. St. Thomas Transformer Station ...	110,000—13,200	C. G. E. Co.	3,000	.....	.....	.....
	13,200—920	C. W. Co.	1,110	.....	.....	4,110	
	13,200—2,300	S. Co. of C.	150	.....	.....	150	
	13,200—4,000	C. W. Co.	225	.....	.....	225	
	110,000—13,200	C. G. E. Co.	5,000	.....	.....	5,000	
12. Cooksville Transformer Station ...	13,200—2,300	C. C. W. Co.	450	.....	.....	450	
Mimico Dist. Station	13,200—2,300	C. G. E. Co.	225	.....	.....	225	
Port Credit Dist. Station	13,200—2,300	C. G. E. Co.	40	.....	.....	40	
Cooksville "	13,200—4,000	P. E. Co.	225	.....	.....	225	
Streetsville "	13,200—4,000	C. G. E. Co.	225	.....	.....	225	
Woodbridge "	13,200—4,000	C. G. E. Co.	225	.....	.....	225	
13. Brant Transformer Station	110,000—26,400	C. W. Co.	5,000	.....	.....	5,000	
Waterford Dist. Station	26,400—4,000	C. W. Co.	225	.....	.....	225	
Drumbo "	26,400—4,000	C. G. E. Co.	225	.....	.....	225	
Ayr "	26,400—4,000	C. G. E. Co.	225	.....	.....	225	
St. George "	220—4,000	C. C. W. Co.	150	.....	.....	150	
14. Kent Transformer Station	110,000—26,400	C. W. Co.	5,000	.....	.....	5,000	
Wallaceburg Dist. Station	26,400—4,000	C. G. E. Co.	450	.....	.....	450	
Tilbury "	26,400—4,000	C. G. E. Co.	300	.....	.....	300	
Dresden "	26,400—4,000	C. W. Co.	225	.....	.....	225	
Bothwell "	26,400—4,000	C. W. Co.	225	.....	.....	225	
Thamesville "	26,400—4,000	C. W. Co.	225	.....	.....	225	
Ridgetown "	26,400—4,000	C. W. Co.	225	.....	.....	225	
Blenheim "	26,400—4,000	.....	.....	C. W. Co.	225	225	
15. Essex Transformer Station	110,000—26,400	C. W. Co.	225	.....	.....	225	
		C. W. Co.	10,000	.....	.....	10,000	

216,350

Table No. 2

**STATION TRANSFORMERS ORDERED FOR MUNICIPALITIES AND COMMISSION
DURING FISCAL YEAR ENDING OCTOBER 31st, 1915**

Station	Cycles	Voltage	Mfr.	No.	Kv-a. each	Total Kv-a.
Niagara Falls Trans. Station.....	25	12,000-63,500	C.W.Co.	6	3,500	21,000
Niagara Falls Dist. Station	25	13,200- 2,300	C.W.Co.	3	100	300
Welland Municipal Station	25	13,200- 2,300	C.G.E.Co.	3	150	450
Dundas Transformer Station— Lynden Dist. Station	25	13,200- 2,300	C.W.Co.	3	75	225
Toronto Transforming Station....	25	63,500-13,200	C.G.E.Co.	3	2,500	7,500
London Transformer Station ,...	25	63,500-13,200	C.G.E.Co.	3	1,250	3,750
Dorchester Dist. Station	25	13,200- 2,300	C.W.Co.	3	75	225
Delaware Dist. Station	25	13,200- 2,300	P.E.Co.	3	25	75
London Utilities Commission ...	25	13,200- 920	C.W.Co.	6	185	1,110
Guelph Transformer Station— Georgetown Dist. Station.....	25	13,200- 2,300	C.G.E.Co.	3	150	450
Berlin Transformer Station	25	63,500-13,200	C.G.E.Co.	3	1,250	3,750
Stratford Transformer Station Listowel Dist. Station.....	25	26,400- 2,300	C.W.Co.	3	100	300
St. Thomas Transformer Station..	25	13,200- 920	C.W.Co.	6	185	1,110
Dutton Dist. Station.....	25	13,200- 2,300	C.W.Co.	3	75	225
Brant Transformer Station— St. George Dist. Station.....	25	220- 2,200	C.C.W.Co.	3	50	150
Burford Dist. Station	25	26,400- 2,300	C.W. Co.	3	75	225
Kent Transformer Station— Chatham Municipal Station.....	25	26,400- 4,000	C.G.E.Co.	2	750	1,500
Bothwell Dist. Station,	25	26,400- 2,300	C.W.Co.	3	75	225
Thamesville Dist. Station.....	25	26,400- 2,300	C.W.Co.	3	75	225
Ridgetown Dist. Station.....	25	26,400- 2,300	C.W.Co.	3	75	225
Blenheim Dist. Station.....	25	26,400- 2,300	C.W.Co.	3	75	225
Essex Transformer Station— Windsor Municipal Station.....	25	26,400- 4,000	C.C.W.Co.	1	750	750
Eugenia Generating Station.....	60	4,000-22,000	C.W.Co.	3	900	2,700
	60	2,200- 550	C.W.Co.	3	50	150
Chatsworth Dist. Station,	60	22,000- 2,300	C.G.E.Co.	3	25	75
Durham Dist. Station	60	22,000- 2,300	C.G.E.Co.	3	50	150
Dundalk Dist. Station	60	22,000- 2,300	C.G.E.Co.	3	50	150
Chesley Dist. Station	60	22,000- 2,300	C.G.E.Co.	3	100	300
Mount Forest Dist. Station	60	22,000- 2,300	C.G.E.Co.	3	100	300
Midland Dist. Station.....	60	22,000- 2,300	M.E.Co.	3	150	450

Total Kv-a., 48,270

Table No. 3

MISCELLANEOUS EQUIPMENT ORDERED FOR MUNICIPALITIES AND COM-
MISSION DURING FISCAL YEAR ENDING OCTOBER 31, 1915

Station	Mfr.	Voltage	Description
Niagara Transformer Station ..	C.W. Co..	110,000; 12,000	Switching equipment for Nos. 6 and 7 banks of transformers and for Nos. 8, 9 and 10 feeders.
Welland Municipal Station ..	C.A.C. Co..	550	1-600 gal. centrifugal pump with 50 h.p. C.G.E. motor.
	C.W. Co..	2,300	Switching equipment for No. 2 transformer bank.
Toronto Transformer Station ..	C.G.E. Co.	110,000; 13,200	Switching equipment for No. 4 bank of transformers.
London Transformer Station— Lucan Dist. Station	C.W. Co..	4,000	Feeder equipment for Ailsa Craig feeder.
London Utilities Commission.	C.W. Co..	13,200; 1,500	Two 500 kw. rotary converters and switching equipment for same and for 2-1,500 volt feeders.
Georgetown	C.W. Co..	13,200; 4,000	Miscellaneous switching equipment for larger transformers.
Stratford Transformer Station— Listowel Dist. Station	C.W. Co..	26,400; 4,000	Complete switching equipment.
Brant Transformer Station— St. George Dist. Station	C.W. Co..	4,000; 220 ..	Complete switching equipment.
Burford Dist. Station	C.W. Co..	26,400; 4,000	Complete switching equipment.
Simcoe Municipal Station	C.W. Co..	4,000	Wiring material for c.c. transformers.
	A.H.W.J. .	2,300	2-15 kw. A.B.Co. c.c. transformers and panels.
St. Thomas Transformer Station	C.W. Co..	13,200, 920, 1,500	Complete switching equipment for rotary converters.
		1,500	2-500 kw. rotary converters.
		110,000; 13,200	Switching equipment for No. 2 bank of transformers.
	C.G.E. Co.	13,200	Switching equipment for No. 1 bank of transformers.
Dutton Dist. Station	C.W. Co..	26,400; 4,000	Complete switching equipment.
Kent Transformer Station— Bothwell Dist. Station	C.W. Co..	26,400; 4,000	Complete switching equipment.
Thamesville Dist. Station	C.W. Co..	26,400; 4,000	Complete switching equipment.
Ridgetown Dist. Station	C.W. Co..	26,400; 4,000	Complete switching equipment.
Ridgetown Corporation	N.E. Co..	2,300	1-22 kw. A.B.Co. c.c. transformer.
	A.H.W.J. .	2,300	Panel for c.c. transformer.
Blenheim Dist. Station	C.W. Co. .	26,400; 4,000	Complete switching equipment.
Blenheim Corporation	N.E. Co. .	2,300	1-22 kw. A.B.Co. c.c. transformer.
	A.H.W.J. .	2,300	Panel for c.c. transformers.
Petrolia Corporation	A.H.W.J. .	2,300	2-16 kw. A.B.Co. c.c. transformers
Chatham Municipal Station ..	C.G.E. Co.	26,400; 4,000	Complete switching equipment.
	C.G.E. Co.	2,300	5-28 kw. c.c. transformers.
Essex Transformer Station— Windsor Municipal Station ..	C.W. Co..	2,300	1-28 kw. c.c. transformer and panel.
	C.W. Co..	26,400; 4,000	Switching equipment for transformer No. 3.
Eugenia Generating Station ...	C.W. Co..	22,000; 4,000	Complete switching equipment.
	C.W. Co..	4,000	Two 1,411 kv.a. generators with exciters.
	C.A.C.Co. .	550	Two centrifugal pumps with motors.
	I.R. Co....	550	Air compressor with motor.
	N.E.I. C. .	4,000	Recording wattmeters.

Table No. 3.—Continued.

Station	Mfr.	Voltage	Description
Owen Sound Dist. Station	C.W. Co...	22,000; 2,300	Switching equipment.
	C.G.E. Co.	22,000.....	Lightning arresters.
	N.E.I.C. ..	2,300.....	Recording wattmeters.
Owen Sound Corporation	C.W. Co...	2,300.....	Feeder panels.
Durham Dist. Station	C.G.E. Co.	22,000; 4,000	Complete switching equipment.
	N.E.I.C. ..	4,000.....	Recording wattmeters.
Durham Corporation	C.G.E. Co.	2,300.....	1-10 kw. c.c. transformer and panel.
Dundalk Dist. Station	C.G.E. Co.	22,000; 4,000	Complete switching equipment.
	N.E.I.C. ..	4,000.....	Recording wattmeter.
Chatsworth Dist. Station	C.G.E. Co.	22,000; 4,000	Complete switching equipment.
	N.E.I.C. ..	4,000.....	Recording wattmeter.
Mount Forest Dist. Station	C.G.E. Co.	22,000; 4,000	Complete switching equipment.
	N.E.I.C. ..	4,000.....	Recording wattmeter.
Mount Forest Corporation ...	C.G.E. Co.	2,300.....	1-20 kw. c.c. transformer and panel.
Chesley Dist. Station	C.G.E. Co.	22,000; 4,000	Complete switching equipment.
	N.E.I.C. ..	4,000.....	Recording wattmeter.
Markdale Corporation	N.E.Co....	2,300.....	1-12 kw. A.B.Co. c.c. transformer with panel.
Midland Dist. Station	Misc.....	2,300.....	Wiring material.
Brockville Dist. Station	C.W. Co...	26,400; 4,000	Complete switching equipment.
Williamsburg Dist. Station	C.W. Co...	2,300.....	Feeder panel.
South Falls Generating Station.	C.G. E. Co.	6,600.....	1-750 kv-a., 3-phase, 60-cycle generator with 1-20 kw. exciter.
Office Building	C.W. Co...	2,300.....	3-30 kv-a., and 2-20 kv-a., 220/110 volt transformers.
	C.W. Co...	2,300; 220; 110	4 panel switchboard.
	I.R.M.C. ..	220.....	Vacuum cleaner and equipment.
	C.B.F.Co. .	220.....	2-2 h.p. water pumps.
	W. Co.....	.....	2 Spencer boilers.
	O.F.E. Co.	220.....	2 passenger elevators.
	“ “	220.....	1 dumb waiter.

Mfr.

Manufacturer or Agent.

C.G.E. Co.	Canadian General Electric Co., Peterboro, Ont.
C.W. Co.	Canadian Westinghouse Co., Hamilton, Ont.
C.C.W. Co.	Canadian Crocker-Wheeler Co., St. Catharines, Ont.
M.E. Co.	Moloney Electric Co. of Canada, Windsor, Ont.
P.E. Co.	Packard Electric Co., St. Catharines, Ont.
S. Co of C.	Siemens Company of Canada, Toronto, Ont.
P.T. Co.	Pittsburgh Transformer Co., Pittsburgh, Pa.
S.U.C. Co.	Standard Underground Cable Co. of Canada, Hamilton, Ont.
G.M.G. Co.	G. M. Gest Co., Montreal, Que.
H.E. Co.	Harland Engineering Co., Toronto, Ont.
C.A.C. Co.	Canadian Allis-Chalmers Co., Toronto, Ont.
A.H.W.J.	A. H. Winter Joyner Limited, Toronto, Ont.
N.E. Co.	Northern Electric Co., Toronto, Ont.
N.E.I.C.	Niagara Electric Improvement Corporation, Buffalo, N.Y.
A.B. Co.	Adams Bagnall Electric Co., Cleveland, Ohio.
I.R.M. Co.	Invincible Renovator Manufacturing Co., Toronto.
C.B.F. Co.	Canadian Buffalo Forge Co., Berlin, Ont.
W. Co.	Waldon Co., Toronto.
O.F.E. Co.	Otis Fensom Elevator Co., Toronto.

LOW-TENSION TRANSMISSION LINES

On October 31, 1915, there were completed and under construction 1,143 miles of low-tension transmission lines, of voltages varying from 46,000 volts to 2,200 volts.

The mileage of these lines is distributed among the various systems as follows:

Niagara System—778.56 miles.

St. Lawrence System—66.35 miles.

Severn System—80.15 miles.

Waddell's Fall System—59.44 miles.

Eugenia Falls System—132.21 miles.

Muskoka System—26.50 miles.

In the construction of these lines 7,694 miles of wire, weighing 14,969,519 lbs., and 45,627 wood poles were used.

On the transmission line poles 996 miles of single-circuit telephone line has been erected for use in operating the system.

During the year 14 gangs were employed, 3 of which, under the direction of a forestry expert, were employed solely in trimming trees. These gangs constructed 419 miles of transmission lines, as well as distributing systems in 9 towns and villages, and rural lines in 6 townships.

For the above lines 400 crossing plans were prepared and submitted to telephone and railway companies for approval.

The low-tension distributing systems were constructed by the Commission in the towns and villages of Chatsworth, Delaware, Flesherton, Durham, Mount Forest, Dundalk, Lambeth, North Williamsburg and Mount Brydges, and rural lines in the townships of East Flamboro, Toronto, Etobicoke, York, Grantham and Norwich.

Description

NIAGARA

Sec. No.	From	To	Length of pole	Span	Miles	No. of Poles
L.T.			feet	feet		
1	Dundas Sub. H.E.P.C....	Junction Pole No. 134....	40	120	2.84	134
2	Junction Pole No. 134....	Beach Pump House.....	40	120	6.34	323
3	" " No. 134....	Asylum	50	120	1.13	67
4	Berlin Sub. H.E.P.C....	Junction Pole No. 10	40	.....	.18	10
5	Junction Pole No. 10....	Waterloo	40	120	1.64	78
6	" " No. 10....	Berlin Corp. Station....	45	120	.76	35
7	Berlin Sub. H.E.P.C....	New Hamburg.....	40	120	12.27	556
8	Woodstock " "	Ingersoll	40	120	9.90	455
9	" " " "	Junction Pole No. 508....	40	120	11.12	508
10	Junction Pole 508.....	Tillsonburg.....	40	120	10.30	467
11	" " " " 508.....	Norwich.....	40	120	4.59	207
12	St. Thomas Sub. H.E.P.C.	St. Thomas Corp. Station	40& 45	120	1.13	50
13	Stratford " "	Stratford " "	40& 45	120	1.75	78
14	Preston " "	Junction Pole No. 99....	45	120	2.04	99
15	Junction Pole No. 99....	Hespeler.....	40	120	2.08	99
16	" " " " 99....	Galt.....	40	120	3.75	173
17	Preston Sub. H.E.P.C....	Preston Corp. Station....	35	120	.14	11
18	London Sub.	Junction Pole No. 38....	40	120	.79	38
19	Junction Pole No. 38....	Asylum, London	45	120	1.54	70
20	" " " " No. 38....	Junction Pole No. 93....	40	120	1.22	55
21	London Sub. H.E.P.C....	London Sub. No. 1.....	40	120	3.56	178
22	Junction Pole No. 93....	" " " " 1.....	40	120	1.71	96
23	" " " " 93....	" " " " 2.....	40	120	.31	20
24	London Sub. No. 1.....	Springbank	40	120	3.55	156
25	Dundas Sub. H.E.P.C....	Dundas Town.....	40& 45	120	.98	58
26	Cooksville Sub. H.E.P.C.	Port Credit L.S. Road ...	40	120	2.74	129
26a	Pt. Credit L.S. Road....	Port Credit Brick Works	45	120	.24	14
27	Cooksville Sub. H.E.P.C.	Brampton	40	120	11.24	510
28	Stratford Sub. H.E.P.C..	Junction Pole No. 648....	40	120	14.39	648
29	Junction Pole No. 648....	Seaforth.....	40	120	12.86	581
30	" " " " 648....	Mitchell	40	120	1.27	63
31	Guelph Sub. H.E.P.C....	O. A. College.....	40	120	1.56	77
32	" " H.E.P.C. Sub. Property	}	40	120	.09	8 {
34	Cooksville Sub. H.E.P.C..	Weston.....	40	120	14.07	551
35	Preston Sub. H.E.P.C....	G. P. & H. Ry.....	40	120	.12	6
36	Junction Pole No. 84, Port Credit.....	Mimico (New Toronto)...	45	120	5.75	266
38	Dundas Sub. H.E.P.C....	Dom. Sewer Pipe Works.	40	120	7.35	350
39	Hamilton Asylum P.H....	Hamilton Asylum.....	35	120	.63	30
40	Junction Pole No. 260....	Waterdown	35	120	1.50	72
40a	Dom. Sewer Pipe Works.	Junction Pole No. 260....	.....	.....	1.92	.....
41	St. Thomas Sub. H.E.P.C.	Port Stanley.....	35	120	12.27	573
42	Junction Pole, Sec. L.T. 48 at Beachville	Standard White Lime Co. ....	.....	.....	1.00	2
43	Dundas Sub. H.E.P.C....	Jno. Bertram & Son.....	40	120	1.21	10
45	Junct. Pole No. L.T. 8-240	Beachville	40	120	.09	3
46	St. Mary's Sub.	St. Mary's Cement Works	40	120	2.22	80

These poles also carry Section L.T. 35

These poles also carry Section L.T. 34 Circuits

These Circuits carried on Sec. L.T. 13 poles Nos. 2 to

Sec. L.T. 29 carries L.T. 67

18 poles on Station

These Circuits carried on

These Circuits carried on

of Lines.
SYSTEM.

Voltage	No. of Cir- cuits	Power Cables B. & S. Gauge	Telephone Wires, B.&S. & B.W.G. Gauge	Work Commenced	Work Completed	In Operation
13,200	2	No. 1/0 Alum	10 Copper	July 13, 1910 ..	Jan. 2, 1911 ..	Feb. 3, 1911
"	2	1/0 "	10 "	July 13, " ..	Jan. 2, " ..	
"	1	2 "	10 "	Dec. 5, " ..	Feb. 8, " ..	
"	2	1/0 "	10 "	Aug. 25, " ..	Sept. 11, 1910 ..	
"	2	1/0 "	10 "	Sept. 11, " ..	Nov. 25, " ..	
"	2	1/0 "	10 "	Aug. 25, " ..	Sept. 11, " ..	
"	2	2 "	10 "	Sept. 11, " ..	Jan. 2, 1911 ..	
"	2	1/0 "	10 "	Nov. 14, " ..	Mar. 28, " ..	
"	2	1/0 "	10 "	Jan. 2, 1911 ..	Apr. 29, " ..	
"	2	1/0 "	10 "	Jan. 2, " ..	Apr. 29, " ..	
"	1	2 "	10 "	Feb. 13, " ..	Mar. 30 " ..	
"	2	1/0 "	10 "	Dec. 14, 1910 ..	Dec. 30, 1910 ..	
"	1	2 Copper	10 "	Built by Corporation		
6,600	3	{ 1-2 Alum	10 "	Oct. 8, 1910 ..	Jan. 19, 1911 ..	
"	1	2-4/0 "	10 "	Oct. 8, " ..	Dec. 30, 1910 ..	
"	2	2 Alum	10 "	Oct. 8, " ..	Jan. 19, 1911 ..	
"	1	4/0 "	10 "	Built by Corporation.		
"	1	2 Copper	10 "			
circuits to G. P. H. Railway Sub.						
13,200	2	{ 1-3/0 Alum	10 Copper	Oct. 26, 1910 ..	Jan. 10, 1911 ..	
"	1	1-2 "	10 "	Oct. 26, " ..	Jan. 19, " ..	
"	1	3/0 "	10 "	Oct. 24, " ..	Jan. 21, " ..	
"	1	3/0 "	10 "	Oct. 20, " ..	Jan. 20, " ..	
"	2	{ 1-3/0 "	10 "	Dec. 23, " ..	Jan. 20, " ..	
"	1	1-1/0 "	10 "	Dec. 23, " ..	Jan. 20, " ..	
"	1	1/0 "	10 "	Jan. 1, 1911 ..	Jan. 7, " ..	
2,200	1	{ 400,000c.m. Alum	Copper }	Dec. 1, 1910 ..	Jan. 1, " ..	
13,200	2	{ 250,000c.m. Copper		Feb. 24, 1911 ..	July 10, " ..	
"	2	2 "	10 "	Apr. 5, " ..	July 23 " ..	
"	2	2 "	10 "	Feb. 15, " ..	May 6, " ..	
from poles No. 1 to 89—1.94 miles						
13,200	2	2 Alum	10 Copper	Apr. 6, 1911 ..	Aug. 4, 1911 ..	
24. inclusive, Sec. L.T. 28 carries L.T. 67 circuits.						
13,200	2	2 Alum	10 Copper	Mar. 25, 1911 ..	Sept. 13, 1911 ..	
circuits to Seaforth Jct. Pole 1153.						
13,200	2	2 "	10 Copper	Mar. 24, 1911 ..	Aug. 3, " ..	
"	1	1/0 "	10 "	July 21, " ..	Nov. 9, " ..	
550d.c.	1	} Municipal lines				
2,200a.c.	4					
13,200a.c.	3	1/0 Alum	10 "	Aug. 7, 1911 ..	Sept. 3, 1911 ..	Sept. 4, 1911
Property in all.						
13,200	2	2 Alum	8 "	Apr. 19, " ..	July 24, " ..	
Section L.T. 27 poles, 1 to 89, inclusive						
6,600	1	1/0 Alum	10 "	Mar. 13, " ..	Mar. 21, " ..	
Sections L.T. 17 poles, 1 to 11, inclusive						
13,200	1	2 Alum	8 "	Apr. 26, " ..	Feb. 29, 1912 ..	
"	1	2 "	8 "	July 21, " ..	Dec. 19, 1911 ..	Apr. 6, 1912
2,200	2	4 Copper	10 "	Sept. 26, " ..	Oct. 27, " ..	Apr. 6, "
13,200	1	2 Alum	8 "	Sept. 30, " ..	Oct. 10, " ..	Apr. 6, "
"	1	2 "	8 "	Sept. 30, " ..	Oct. 7, " ..	Mar. 1, "
"	1	2 "	8 "	Oct. 16, " ..	Mar. 8, 1912 ..	Mar. 9, "
2,200	1	2 "	.....		
L.T. 8 poles, from Beachville pole 290 to pole 240.						
13,200	1	2 Alum	10 Copper	Dec. 1, 1911 ..	Dec. 19, 1911 ..	Dec. 21, 1911
L.T. 25 poles, 1 to 58 inclusive.—.98 miles						
13,200	1	1/0 Alum	8 Copper	June 1, 1912 ..	June 29, 1912 ..	July 17, 1912
"	1	3/0 "	8 "	July 15, " ..	Aug. 19, " ..	Sep. 7, "

Description of

NIAGARA

Sec. No.	From	To	Length of Pole	Span	Miles	No. of Poles
47	Dundas Sub	Caledonia.....	feet 40	feet 120	14.36	674
47a	Caledonia	Paris Alabastine Co.....			.22	
48	Caledonia	Junction Pole No. 940....	40	120	5.87	267
49	Junction Pole No. 940....	Hagersville	40	120	3.79	176
50	" " 940....	Lythmore.....	40	120	4.98	230
55	St. Thomas Sub. H.E.P.C.	L.L.E. Ry. Sub.....	40	120	1.68	88
56	Port Credit	Toronto Golf Club.....	30	120	3.24	11
56a	Extension from Sect. L.T. 56 on T.G.C. property..				Carried on Section .90	37
57	O. A. College.....	Guelph Prison Farm. Pole 156.....	40	120	1.93	86
57a	Guelph Prison Farm	Property	40	120	.08	4
58	Guelph Prison Farm, Pole 156.....	Junction Pole No. 454....	40	120	6.42	297
59	Junction Pole No. 454....	Acton	40	120	5.82	268
60	St. Catharines	Port Dalhousie	30	120	3.18	142
61	Caledonia Sub.....	Caledonia .....			.30	
62	Junction Pole L.T. 27-230.	Milton.....	40	120	16.65	740
63	Preston Sub	Doon Twine Mill	35	120	4.18	208
64	Mimico Sub.....	Mimico Asylum.....			Carried on Section 1.51	17
65	Acton	Georgetown	40	120	9.03	411
66	Junction Pole No. 454....	Rockwood	35	120	1.64	77
67	Stratford Sub. H.E.P.C.	Goderich.....	40	120	48.36	1,007
68	Brant Station	Paris	40	120	3.21	152
69	" "	Brantford	40	120	6.66	320
71	Waterloo	Elmira	40	120	10.93	518
72	Preston	Breslau	40	120	6.48	293
73	Niagara Falls.....	Junction Pole 113.....	48	250	5.00	113
74	Junction Pole 113.....	Union Carbide Co.....	48	250	10.50	235
75	" " 303.....	Electric Steel & Metal Co	48	250	1.93	45
76	Junction Pole	Crumlin Junction.....	35	132	5.31	218
77	Crumlin Junction.....	Thorndale	35	132	7.91	310
78	" "	Thamesford	35	132	6.85	281
79	Junction Pole L.T. 62-381.	Streetsville.....	45	120	.43	19
80	" "	Clinton	40	120	1.27	62
81	Essex Station	Jct. Pole No. 55	45	120	1.10	55
82	Jct. Pole No. 55.....	Windsor	45	120	2.27	102
83	Jct. Pole No. 55.....	Walkerville.....	40	120	1.30	61
84	Kent Station	Chatham	40	132	1.93	99
85	Junction Pole L.T. 57-118.	Junction Pole L.T. 85-776	40	120	14.61	658
86	" " 85-776.	Elora	40	120	1.18	58
87	" " 85-776.	Fergus	35	120	1.96	94
88	Paris	Junction Pole No. 313....	35-40	132	7.41	312
89	Jct. Pole L.T. 88-313....	Ayr	40	120	1.20	58
90	Jct. Pole L.T. 88-313....	Drumbo	35	132	6.83	284
91	Drumbo	Princeton	35	132	5.65	233
92	Drumbo	Plattsville.....	35	132	7.35	299
93	Jct. Pole L.T. 77-388....	Deller Bros	30	132	.89	48
94	Jct. Pole L.T. 65-1005....	L. P. B. Co.....	35	132	5.08	221
95	London	Lambeth (Pole No. 462)..	40	120	10.15	463
96	Lambeth (Pole No. 462)..	Komoka Jct. (Pole No. 759)	40	120	6.58	298
97	Komoka Jct. (Pole No. 759)	Mt. Brydges (Pole No. 943)	40	120	4.00	184
98	Mt. Brydges (Pole No. 943)	Strathroy (Pole No. 1,368)	40	120	9.27	424
99	London	Lucan	35-40	132	19.18	733
100	Niagara Falls	Elect. Devel. Co	45	100	1.25	52

Lines—Continued

SYSTEM

Voltage	No. of Circuits	Power Cables B. & S. Gauge	Telephone Wires, B. & S. & B. W. G. Gauge	Work Commenced	Work Completed	In Operation
13,200	1	3/0 Alum	8 Copper	May 10, 1912 ..	Sep. 18, 1912 ..	Sep. 20, 1912
2,200	1	2/0 Copper	.....	Sep. 5, " ..	Sep. 18, " ..	" 20, "
Section L.T. 49 poles.						
13,200	1	3/0 Alum	8 Copper	June 22, " ..	Sep. 18, " ..	Sep. 20, "
"	1	2 "	10 "	Feb. 28, 1913 ..	May 2, 1913 ..	Aug. 15, 1913
"	1	3/0 "	8 "	June 15, 1912 ..	Sep. 18, 1912 ..	Sep. 20, "
"	1	2 "	8 "	Aug. 9, " ..	Oct. 11, " ..	Oct. 27, "
2,200	1	6 D.B.W.P. Copper	.....	June 10, " ..	Aug. 3, " ..	Aug. 6, "
L.T. 36 poles						
2,200	1	6 "	.....	Nov. 22, " ..	Jan. 3, 1913 ..	Dec. 24, "
13,200	1	2 Alum	8 Copper	Aug. 19, " ..	Dec. 14, 1912 ..	Dec. 14, "
"	1	2 "	10 "	May 14, 1913 ..	May 19, 1913 ..	Sep. 4 "
"	1	2 "	8 "	Aug. 19, 1912 ..	Dec. 14, 1912 ..	Dec. 14, 1912
"	1	2 "	8 "	" 19, 1912 ..	Dec. 14, 1912 ..	Dec. 14, "
2,200	1	1/0 "	.....	Oct. 16, 1912 ..	Nov. 21, " ..	Nov. 17, "
"	1	4 D.B.W.P. Copper	.....	Nov. 20, 1912 ..	Nov. 30, " ..	Nov. 30, "
Section L.T. 50 poles.						
13,200	1	3/0 Alum	10	Nov. 25, 1912 ..	Mar. 13, 1913 ..	Mar. 13, 1913
6,600	1	2 "	.....	Dec. 2, 1912 ..	Apl. 11, " ..	Apl. 1, "
L.T. 17 poles, No. 1 to 11, inclusive. L.T. 35 from 11 to 17 inclusive.						
2,200	1	2 Copper	.....	Mar. 30, 1912 ..	Feb. 3, " ..	Apl. 26, "
L.T., 36 poles						
13,200	1	3/0 Alum	10	Mar. 11, 1913 ..	Aug. 1, " ..	Aug. 1, "
"	1	2 "	10 CC.Steel	May 6, 1913 ..	July 3, " ..	Aug. 1, "
26,400	2	3/0 "	"	Apr. 23, 1913 ..	June 9, 1914 ..	Dec. 23, "
29 poles, to Seaforth Junction from Stratford.						
26,400	2	3/0 Alum	10 CC.Steel	Nov. 11, 1913 ..	Jan. 2, " ..	Jan. 3, 1914
26,400	2	3/0 "	"	Dec. 15, 1913 ..	Jan. 17, " ..	Jan. 17, "
13,200	1	2 "	"	May 17, 1913 ..	Oct. 14, 1913 ..	Oct. 25, 1913
6,600	1	2 "	"	Apr. 4, 1913 ..	Dec. 23, 1913 ..	Dec. 23, 1913
46,000	3	4/0 Copper	8	Mar. 5, 1914 ..	} Steel Towers. ..	Aug. 20, 1914
46,000	3	4/0 "	8	Mar. 5, 1914 ..		Aug. 20, 1914
46,000	1	2/0 "	8	July 11, 1914 ..	} Steel Towers. ..	Oct. 17, 1914
13,200	1	2 Alum	.....	Sept. 18, 1913 ..		Jan. 27, 1914
"	1	2 "	.....	Oct. 10, 1913 ..	Feb. 6, 1914 ..	Feb. 6, "
"	1	2 "	"	Oct. 13, 1913 ..	Jan. 19, " ..	Jan. 27, "
"	1	2 "	10 CC.Steel	Nov. 1, 1913 ..	Nov. 24, 1913 ..	Nov. 24, 1913
26,400	2	3/0 "	10 "	Sept. 20, 1913 ..	Feb. 15, 1914 ..	Sep. 6, 1914
26,400	4	3/0 "	10 "	July 28, 1914 ..	Sept. 6, 1914 ..	
"	2	3/0 "	10 "	July 31, 1914 ..	Sept. 18, 1914 ..	Sep. 18, "
"	2	3/0 "	10 "	June 2, 1914 ..	Aug. 1, 1914 ..	Sep. 6, "
"	2	2/0 "	10 "	Oct. 21, 1914 ..	Feb. 22, 1915 ..	Feb. 1, 1915
13,200	1	3/0 "	10 "	June 3, 1914 ..	Oct. 17, 1914 ..	Oct. 22, 1914
"	1	3/0 "	10 "	Aug. 18, 1914 ..	Oct. 28, 1914 ..	Oct. 22, "
"	1	3/0 "	10 "	Aug. 1, 1914 ..	Oct. 13, 1914 ..	Oct. 22, "
26,400	1	1/0 "	10 "	July 21, 1914 ..	Nov. 30, 1914 ..	Dec. 1, "
"	1	1/0 "	10 "	Sept. 15, 1914 ..	Nov. 30, 1914 ..	Dec. 1, "
"	1	1/0 "	10 "	July 13, 1914 ..	Nov. 30, 1914 ..	Dec. 1, "
4,000	1	6 Copper	.....	Aug. 17, 1914 ..	Nov. 30, 1914 ..	Dec. 18, "
"	1	4 "	.....	Aug. 17, 1914 ..	Nov. 30, 1914 ..	Dec. 1, "
n L.T. 90 Poles						
4,000	1	6 "	.....	Mar. 19, 1914 ..	Mar. 19, 1915 ..	Mar. 19, 1915
13,200	1	1/0 Alum	10 CC.Steel	June 10, 1914 ..	June 31, 1914 ..	July 3, 1914
"	1	3/0 "	10 "	Sept. 1, 1914 ..	Nov. 30, 1914 ..	Nov. 30, "
"	1	3/0 "	10 "	Oct. 15, 1914 ..	Nov. 30, 1914 ..	Nov. 30, "
"	1	3/0 "	10 "	Sept. 29, 1914 ..	Nov. 30, 1914 ..	Nov. 30, "
"	1	3/0 "	10 "	Sept. 14, 1914 ..	Nov. 30, 1914 ..	Nov. 30, "
"	1	2 S.R. "	10 BWG Iron	Oct. 23, 1914 ..	Jan. 20, 1915 ..	Jan. 21, 1915
12,000	2	4/0 Copper	9	Oct. 27, 1915 ..	Oct. 31, 1915 ..	Oct. 31, "

Description of
NIAGARA

Sec. No.	From	To	Length of Pole.	Span.	Miles	No. of Poles
101	Kent Stat. Pole No. 40...	Tilbury	feet 30	feet 132	16.91	85
102	Kent Station	Junction No. 68	40	120	15.00 miles carried	68
102a	Kent Station	Junction Pole No. 68.....			1.48	
102b	Kent Station	Junction Pole No. 68.....			1.48	
103	Junction Pole L.T. 102-68.	Junction Pole No. 519....	40	120	9.98	451
103a	Junction Pole L.T. 102-68.	Junction Pole No. 519....			9.98	
104	Junction Pole L.T. 103-519	Wallaceburg	40	120	8.50	386
105	Junction Pole L.T. 103-519	Dresden	40	120	7.40	309
106	Junction Pole L.T. 8-289 ..	Embro	35	132	6.10	254
107	Junction Pole L.T. 34-564 ..	Woodbridge	35	132	6.44	277
108	Woodbridge	Bolton	35-40	132	13.03	540
109	Junction Pole	N. T. & I. Ry. ....			.02	2
110	Mimico Sub-Station	Prison Brick Yard.....	30	125	.71	32
111	Brant Sub-Station	Junction Pole L.T. 111-249	35-40	132	5.84	249
112	Junction Pole L.T. 111-249	Burford	35	132	3.48	142
113	Junction Pole L.T. 111-249	Waterford	35-40	132	14.20	616
114	Waterford	Simcoe	35	132	8.90	366
115	Tilbury	Comber	30	132	7.26	306
116	Deleware Sub-Station ...	Lambeth	40	120	6.58	.....
117	“ Junec. Pole 759.,	Mount Brydges	40	120	4.60	Carried on
118	Bertram's Sub-Station, Pole No. 69-L.T. 43....	Dundas	55	.....	.37	21
119	Junction Pole L. T. 96-759	Deleware Sub-Station ...	55	120	.09	5
120	.....	.....		Lambeth & Mt. Brydges		
121	St. Thomas.....	Dutton	30	132	18.50	756
123	Junction Pole L.T. 102-68	Thamesville	35	132	14.60	683
124	Junction Pole L.T. 123-676	Bothwell	35	132	9.83	410
125	Stratford.....	Tavistock	35	132	e10.10	450
126	Junction Pole L.T. 102-68	Blenheim	35	132	9.52	390
127	Junction Pole L.T. 123-469	Ridgetown.....	35	132	8.02	333
128	Brant	St. George	30	132	e 9.25	342
129	Dundas	Lynden	35	132	e 9.75	420
130	Lucan	Ailsa Craig	30	132	e 9.50	390
131	Dresden	Petrolia	35-40	125	e24.00	1,010
132	.....	.....		
133	.....	.....		
134	.....	.....		
135	.....	.....		
137	.....	.....		
138	Sebringville Junction Pole L.T. 67-311	Milverton Junction Pole ..	35	132	e12.50	510
139	Milverton Junction Pole ..	Milverton.....	35	132	e 1.25	48
140	“ “	Listowel Junction Pole ..	35	132	e13.00	540
141	Listowel Junction Pole ..	Listowel	35	132	e 2.50	103
142	“ “	Palmerston	35	132	e10.00	415
143	Palmerston	Harriston	35	132	e 7.00	290

“e” Estimate mileage under construction.

Lines—Continued

SYSTEM

Voltage.	No. of Circuits	Power Cable B. & S. Gauge	Telephone Wires, B. & S. & B. W. G. Gauge	Work Commenced	Work Completed	In Operation
26,400 on H.T. Telephone	1	2 S.R. Alum Poles	10 BWG Iron	Jan. 13, 1915....	May 12, 1915....	Mar. 3, 1915
26,400	1	1/0 "	10 "	Oct. 28, 1914....	Feb. 3, "	Feb. 3, "
"	1	3/0 "	"	June 22, 1915....	June 29, "	June 29, "
"	1	3/0 "	"	Oct. 7, "	Oct. 13, "	Oct. 13, "
"	1	1/0 "	10 BWG Iron	Oct. 30, 1914....	Feb. 3, "	Feb. 3, "
"	2	3/0 "	"	Oct. 12, 1915....	"	"
"	1	1/0 "	10 BWG Iron	Nov. 6, 1914....	Feb. 3, "	Feb. 3, "
"	2	3/0 "	10 "	Nov. 3, "	May 1, "	Mar. 30, "
13,200	1	1/0 "	10 "	Oct. 1, "	Dec. 24, 1914....	Dec. 22, 1914
"	1	1/0 "	10 "	Sept. 25, "	Oct. 21, "	Dec. 2, "
"	1	3/0 "	10 "	Oct. 20, "	Nov. 26, "	Jan. 26, 1915
"	1	2 "	10 "	Sep. 12, "	Sep. 12, "	Sep. 13, 1914
2,200	1	2/0 Copper	"	Oct. 24, "	Feb. 17, 1915....	Feb. 17, 1915
26,400	1	2 S.R. Alum	10 BWG Iron	Nov. 6, "	May 4, "	May 6, "
"	1	2 S.R. "	10 "	Nov. 21, "	May 28, "	May 6, "
"	1	2 S.R. "	10 "	Nov. 21, "	May 5, "	May 10, "
"	1	2 S.R. "	10 "	Nov. 26, "	May 7, "	May 9, "
4,000	1	1/0 Copper	"	Jan. 14, 1915....	May 8, "	Apr. 20, "
"	1	6 Copper	"	Jan. 25, "	Mar. 12, "	Mar. 15, "
L.T. 96 poles						
4,000	1	6 B.H.D.	"	Jan. 7, "	Jan. 23, "	Mar. 1, "
L.T. 97 poles						
13,200	1	1/0 Alum	10 "	Feb. 25, "	Mar. 15, "	Mar. 15, "
"	1	3/0 "	10 "	Jan. 27, "	Mar. 9, "	Feb. 1, "
4,000 v. circuit carried on L.T. 119 poles						
13,200	1	1/0 Alum	"	May 3, "	Aug. 21, "	Aug. 27, "
26,400	1	1/0 "	9 BWG. Iron	May 18, "	July 14, "	Sept. 14, "
"	1	2 S.R. Alum	9 "	June 26, "	Aug. 17, "	Aug. 17, "
"	1	2 "	9 "	Sept. 9, "	"	"
"	1	2 "	9 "	July 2, "	Oct. 7, "	Oct. 20, "
"	1	2 "	9 "	June 24, "	Sept. 7, "	Nov. 24, "
4,000	1	2 "	9 "	July 1, "	Aug. 17, "	Aug. 17, "
H.T. Tel. and Railway line						
13,200	1	2 S.R. Alum	9 "	July 24, "	Oct. 15, "	Oct. 22, "
4,000	1	2 S.R. "	"	July 28, "	"	"
26,400	2	3/0 "	9 BWG. Iron	Aug. 30, "	"	"
26,400	1	1/0 S.R. Alum	9 BWG. Iron	Sept. 20, 1915....	"	"
"	1	2 "	9 "	Oct. 15, "	"	"
"	1	1/0 "	9 "	Oct. 13, "	"	"
"	1	2 "	9 "	"	"	"
"	1	1/0 "	9 "	Oct. 14, "	"	"
"	1	1/0 "	9 "	"	"	"

Description of
SEVERN

Sec. No.	From	To	Length of pole	Span	Miles	No. of Poles
S.L.			feet	feet		
1	Waubashene (S.R. & P. Co.)	Jct. Pole (Coldwater)	40	120	4.29	193
2	Jct. Pole (Coldwater)	Coldwater Sub-Station...	40	120	1.16	55
3	" " " " " " " " " " " "	Jct. Pole (Elmvale).....	40	120	15.86	710
4	" " (Elmvale)	Elmvale Sub-Station.....	40	120	.42	19
5	" " " " " " " " " " " "	Jct. Pole (Phelpston)	40	120	4.55	207
6	" " (Phelpston)	Barrie Sub-Station	40	120	12.27	550
7	" " " " " " " " " " " "	Jct. Pole (Stayner)	40	120	15.07	675
8	" " (Stayner)	Stayner Sub-Station.....	40	120	1.50	68
9	" " " " " " " " " " " "	Collingwood Sub-Station.	40	120	11.86	530
10	Stayner	Creemore	35	120	7.67	348
15	Jct. Pole L.T. 37	Port McNicoll			1.00	51
L.T.						
37	Midland (S. R. & P. Co.)..	Penetang Sub-Station....	40	120	4.50	223

ST.L. ST. LAWRENCE

1	Morrisburg	Prescott.....	40	120	22.96	1,083
2	" " " " " " " " " " " "	Winchester	40	120	16.29	747
3	Winchester	Chesterville	40	120	6.52	294
5	Prescott	Brockville	40	120	14.08	639
6	Morrisburg	North Williamsburg			6.50	.....
This Circuit carried on St. L. 2 poles.						

WASDELL'S FALLS

W.L						
1	Waddell's Falls	Jct. No. 1	40	120	25.50	1,203
2	Jct. No. 1.....	Beaverton	40	120	1.47	70
3	Jct. No. 1.....	Cannington	40	120	9.67	442
4	Beaverton	Gamebridge			6.50	.....
Carried on Sec. W.L. 1 & 2 poles						
5	Gamebridge	Brechin			3.75	.....
Carried on Sec. W.L. 1 poles						
6	Cannington	Woodville	30	120	5.15	147
7	Cannington	Sunderland	30	120	7.40	335

EUGENIA FALLS

EFL			feet	feet		
1	Eugenia Falls Pwr. House	Chatsworth Sub-Station.	40	125	22.15	972
2	Chatsworth Sub-Station.	Owen Sound	40	125	9.22	394
3	Eugenia Falls Pwr. House	Flesherton Junction Pole No. 296.....	40	125	6.78	296
4	Flesherton Junction Pole No. 296.....	Durham	40	125	15.97	687
5	Durham	Mount Forest.....	40	125	15.70	692
7	Durham	Hanover Junction Pole ..	40	125	e11.50	525
8	Hanover Junction Pole ..	Chesley	40	125	e12.00	.....
9	Flesherton Junction Pole No. 296.....	Dundalk	40	125	11.73	500
10	Dundalk	Shelbourne	40	125	13.16	562
12	Eugenia Falls Pwr. House	Markdale.....			e 6.50	.....
Carried on						
13	Eugenia Falls Pwr. House	Flesherton.....			e 7.50	.....
Carried on						
14	Durham	Holstein .....				.....
Carried on						

MUSKOKA

ML						
1	South Falls.....	Huntsville	35	132	e26.50	1,087

" e " Estimate mileage under construction.

Lines.—Continued.

SYSTEM

Voltage	No. of Cir- cuits	Power Cable B. & S. Gauge	Telephone Wires B. & S. Gauge	Work Commenced	Work Completed	In Operation
22,000	2	4/0 Alum	10 CC.Steel	Sep. 20, 1912 ..	Feb. 18, 1913 ..	Feb. 24, 1913
"	1	2 "	"	Sep. 20, " ..	Feb. 18, " ..	Feb. 24, "
"	2	4/0 "	"	Sep. 25, " ..	Feb. 18, " ..	Feb. 24, "
"	1	2 "	"	Feb. 1, 1913 ..	May 17, " ..	May 27, "
"	2	4/0 "	"	Oct. 20, 1912 ..	Feb. 18, " ..	Feb. 24, "
"	2	2/0 "	"	Nov. 6, " ..	Apl. 5, " ..	April 6, "
"	2	3/0 "	"	Oct. 23, " ..	Feb. 18, " ..	Feb. 24, "
"	1	2 "	"	Jan. 24, 1913 ..	Apl. 26, " ..	Sep. 25, "
"	2	3/0 "	"	Nov. 1, 1912 ..	Feb. 18, " ..	Feb. 24, "
4,000	1	1/0 "	.....	Aug. 15, 1914 ..	Oct. 25, 1914 ..	Oct. 21, 1914
22,000	1	1/0 "	10 "	Oct. 15, " ..	Dec. 25, " ..	Dec. 24, "
"	1	2 "	10 CC.Steel	June 7, 1911 ..	July 18, 1911 ..	July 18, 1911

SYSTEM

264,00	1	3/0 Alum	10 CC.Steel	Oct. 29, 1912 ..	June 14, 1912 ..	Oct. 23, 1913
"	1	3/0 "	"	June 4, 1913 ..	Dec. 15, 1913 ..	Dec. 18, "
"	1	3/0 "	"	Sept. 6, " ..	Feb. 17, 1914 ..	Feb. 7, 1914
"	1	3/0 "	"	Oct. 16, 1914 ..	Mar. 20, 1915 ..	Apr. 4, 1915
2,200	1	6 Copper	.....	Feb. 22, 1915 ..	"	Mar. 20, "

SYSTEM

22,000	1	1/0 Alum	10 CC.Steel	Jan. 17, 1914 ..	Sept. 28, 1914 ..	Sep. 28, 1914
"	1	1/0 "	"	Mar. 30, " ..	"	Sep. 28, "
"	1	1/0 "	"	Feb. 18, " ..	"	Sep. 28, "
4,000	1	1/0 "	.....	May 2, " ..	.....	Oct. 6, "
4,000	1	1/0 "	.....	July 25, " ..	.....	Oct. 6, "
4,000	1	1/0 "	.....	May 19, " ..	.....	Oct. 19, "
4,000	1	1/0 "	.....	June 1, " ..	July 10, 1914 ..	Oct. 19, "

SYSTEM

22,000	2	3/0 Alum	Galv. 9 BWG. Iron	Mar. 17, 1915....	July 7, 1915....	Nov. 18, 1915
"	2	3/0 "	9 "	Apr. 7, "	Sept. 24, "	" "
"	2	3/0 "	9 "	Apr. 10, "	July 21, "	" "
"	2	3/0 "	9 "	Apr. 13, "	July 11, "	" "
"	2	3/0 "	9 "	Apr. 26, "	Aug. 25, "	" "
"	1	3/0 "	9 "			
"	1	3/0 "	9 "			
"	1	1/0 "	9 "	May 20, "	Aug. 14, "	" "
"	1	1/0 "	9 "	June 9, "	Aug. 24, "	" "
4,000	1	2 S.R. Alum				
EFL 1 Poles	1	2 "	.....	June 4, "	Aug. 16, "	" "
4,000	1	2 "				
EFL 3 Poles	1	2 "				
4,000	1	2 "				
EFL 5 Poles	1	2 "				

SYSTEM

22,000	1	2 S.R. Alum	Galv. 9 BWG. Iron	Aug. 6, 1915....		
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The mileage of lines tabulated according to voltage and number of circuits is as follows:

—	Single Circuit Totals				Double Circuit Totals				Three Circuit Totals				Four Circuit Totals				1-2-3-4-Circuit Totals			
	Completed Oct. 31, 1914	Completed Oct. 31, 1914	Under Construction Oct. 31, 1915	Completed Oct. 31, 1914	Completed Oct. 31, 1914	Completed Oct. 31, 1914	Under Construction Oct. 31, 1915	Completed Oct. 31, 1914	Completed Oct. 31, 1914	Completed Oct. 31, 1914	Completed Oct. 31, 1914	Under Construction Oct. 31, 1915	Completed Oct. 31, 1914	Completed Oct. 31, 1914	Completed Oct. 31, 1914	Completed Oct. 31, 1914	Completed Oct. 31, 1914	Under Construction Oct. 31, 1915	Completed Oct. 31, 1914	Under Construction Oct. 31, 1915
Voltage																				
46,000.....	1.93									15.50						17.43				
26,400.....		126.70	56.35	63.07	9.33	24.00							1.10			64.17	136.03			80.35
22,000.....	89.99	39.97	50.00	63.90	69.82											153.89	109.79			50.00
13,200.....	184.40	97.02		115.79				.09								300.28	97.02			
12,000.....		1.25															1.25			
6,600.....	13.00			3.75				2.04								18.79				
4,000.....	30.47	48.48	16.00													30.47	48.48			16.00
2,200.....	11.42	7.21		.63												12.05	7.21			
Total.....	331.21	320.63	122.35	247.14	79.15	24.00		17.63			1.10					597.08	399.78			146.35

Total under construction for 1914, but completed in 1915.....126.82
 Plus Circuits completed in 1915.....272.96

Total.....399.78

Total Mileage of Lines and Number of Poles

—	To Oct. 31st, 1914	Oct. 31st, 1914, to Oct. 31st, 1915	Total to Oct. 31st, 1915
Total mileage low tension lines.....	723.90	419.31	1,143.21
Total mileage low tension lines completed	597.08	272.96	870.04
Total mileage low tension lines under construction..	126.82	146.35	273.17
Total mileage single circuit lines.....	456.10	316.84	772.94
Total mileage double circuit lines.....	249.07	102.47	351.54
Total mileage three circuit lines.....	17.63	.....	17.63
Total mileage four circuit lines.....	1.10	.....	1.10
Total mileage telephone lines complete.....	531.03	334.84	865.87
Total mileage telephone lines under construction..	.....	130.35	130.35
Number of poles	29,698	15,929	45,627

Total Weights and Mileages of Cable and Wire

Cable and Wire	Wire Miles				Weight in Pounds			
	Complete to Oct. 31st, 1914	Complete Oct. 31st, 1914 to Oct. 31st, 1915	Under construction to Oct. 31st, 1915	Completed and under construction to Oct. 31st, 1915	Complete to Oct. 31st, 1914	Completed Oct. 31st, 1914 to Oct. 31st, 1915	Under construction to Oct. 31st, 1915	Completed and under construction to Oct. 31st, 1915
Aluminum	2,479.53	1,017.84	214.50	3,711.87	1,553,414	762,452	182,265	2,498,132
Steel Reinforced								
Aluminum		367.14	296.55	663.69		378,218	151,564	529,783
Copper Wire	122.31	120.57		242.88	360,531	118,194		478,726
Copper Clad								
Steel Wire	1,062.06	124.90		1,186.96	1,862,111	196,027		2,058,138
Galv. Iron Wire		544.78	260.70	805.48		1,572,570	818,326	2,390,896
Galv. Steel								
Cable	578.05	365.24	139.85	1,083.14	3,754,088	2,372,015	887,742	7,013,845
Totals	4,241.95	2,540.47	911.60	7,694.02	7,530,144	5,399,476	2,039,897	14,969,519

Gauge, Length and Weight of Copper Clad Steel and Galvanized Iron Wire

Gauge	Wire Miles				Weight in Pounds				Single Circuit Mileage			
	Completed to Oct. 31st, 1914	Completed Oct. 31st, 1914 to Oct. 31st, 1915	Under con- struction to Oct. 31st, 1915	Completed and under con- struction to Oct. 31st, 1915	Completed to Oct. 31st, 1914	Completed Oct. 31st, 1914 to Oct. 31st, 1915	Under con- struction to Oct. 31st, 1915	Completed and under con- struction to Oct. 31st, 1915	Completed to Oct. 31st, 1914	Completed Oct. 31st, 1914 to Oct. 31st, 1915	Under con- struction to Oct. 31st, 1915	Completed and under con- struction to Oct. 31st, 1915
No. 8 B. & S., C.C. steel..	207.32	.....	.....	207.32	520,615	.....	.....	520,615	103.66	.....	.....	103.66
No. 9 B. W. G., galv. iron..	.....	313.86	260.70	574.56	.....	985,193	818,326	1,803,519	.....	156.93	130.35	287.28
No. 10 B. W. G., galv. iron..	.....	230.92	.....	230.92	.....	587,377	.....	587,377	.....	115.46	.....	115.46
No. 10 B. & S., C.C. steel..	854.74	124.90	.....	979.64	1,341,496	196,027	.....	1,537,523	427.37	62.45	.....	489.82
Totals....	1,062.06	669.68	260.70	1,992.44	1,862,111	1,768,597	818,326	4,449,034	531.03	334.84	130.35	996.22

Gauge, Length and Weight of Conductors

	Wire Miles		Weight Pounds		Miles Single Circuit Lines		Miles Double Circuit Lines			Total Single Circuit and Double Circuit Lines completed Oct. 31, 1915
	Completed to Oct. 31, 1914	Completed Oct. 31, 1914, to Oct. 31, 1915	Completed to Oct. 31, 1914	Completed Oct. 31, 1914, to Oct. 31, 1915	Under construc- tion to Oct. 31, 1915	Com- pleted to Oct. 31, 1914	Com- pleted Oct. 31, 1914, to Oct. 31, 1915	Com- pleted to Oct. 31, 1914	Under construc- tion to Oct. 31, 1915	
Brown & Sharpe Gauge										
400,000 c.m. Alum.	1.59	.....	3,168	.....	.....	.53	.....	.....	.....	.53
4/0 Aluminum.....	182.94	.....	192,764	.....	.....	.....	.....	30.49	.....	30.49
3/0 ".....	924.93	703.68	773,612	597,934	182,266	123.91	60.16	92.20	24.00	363.47
2/0 ".....	79.41	11.58	52,663	7,585	.....	1.93	.....	12.27	1.93	16.13
1/0 ".....	533.52	302.58	280,539	156,932	.....	89.24	100.86	44.30	.....	234.40
2 ".....	757.14	.....	250,669	.....	.....	114.22	.....	69.08	.....	183.30
2 S.R. ".....	.....	367.14	.....	378,219	83,345	.....	122.38	.....	.....	122.38
1/0 S.R. ".....	.....	.....	.....	.....	68,219	.....	.....	42.50	.....	.....
250,000 c.m. Copper	1.35	.....	5,583	.....	.....	.45	.....	.....	.....	.45
4/0 Copper.....	93.00	3.75	327,251	12,987	.....	.....	1.25	15.50	.....	16.75
2/0 ".....	.66	2.13	1,562	4,646	.....	.22	.71	.....	.....	.93
1/0 ".....	.....	21.78	.....	37,593	.....	.....	7.26	.....	.....	7.26
2 ".....	10.20	.....	13,393	.....	.....	3.40	.....	.....	.....	3.40
4 ".....	4.68	22.05	4,340	15,029	.....	.30	7.35	.63	.....	8.28
6 ".....	12.42	70.86	8,401	47,937	.....	4.14	23.62	.....	.....	27.76
Totals.....	2,601.84	1,505.55	1,913,945	1,258,886	333,830	338.34	323.59	264.47	24.00	1,015.53

Total Mileage Low Tension Telephone Lines

COMPLETED AND UNDER CONSTRUCTION TO OCTOBER 31, 1915

Sect. No.	Miles	Sect. No.	Miles	Sect. No.	Miles	Sect. No.	Miles
L.T. 1....	2.84	L.T. 40 A	1.92	L.T. 95	10.15	S.L. 4	.42
" 2....	6.34	" 41	12.27	" 96	6.58	" 5	4.55
" 3....	1.13	" 43	1.21	" 97	4.00	" 6	12.27
" 4....	.18	" 45	.09	" 98	9.27	" 7	15.07
" 5....	1.64	" 46	2.22	" 99	19.18	" 8	1.50
" 6....	.76	" 47	14.36	" 100	1.25	" 9	11.86
" 7....	12.27	" 48	5.87	" 101	16.91	" 15	1.00
" 8....	9.90	" 49	3.79	" 102	1.48	L.T. 37	4.50
" 9....	11.12	" 50	4.98	" 103	9.98	St. L. 1	22.96
" 10....	10.30	" 55	1.68	" 104	8.50	" 2	16.29
" 11....	4.59	" 57	1.93	" 105	7.40	" 3	6.52
" 12....	1.13	" 57 A	.08	" 106	6.10	" 5	14.08
" 13....	1.75	" 58	6.42	" 107	6.44	W.L. 1	25.50
" 14....	2.04	" 59	5.82	" 108	13.03	" 2	1.47
" 15....	2.08	" 62	16.65	" 109	.02	" 3	9.67
" 16....	3.75	" 65	9.03	" 111	5.84	E.F.L. 1	22.15
" 17....	.14	" 66	1.64	" 112	3.48	" 2	9.22
" 18....	.79	" 67	48.36	" 113	14.20	" 3	6.78
" 19....	1.54	" 68	3.21	" 114	8.90	" 4	15.97
" 20....	1.22	" 69	6.66	" 118	.37	" 5	15.70
" 21....	3.56	" 71	10.93	" 119	.09	" 7	E 11.50
" 22....	1.71	" 72	6.48	" 123	14.60	" 8	E 12.00
" 23....	.31	" 73	5.00	" 124	9.83	" 9	11.73
" 24....	3.55	" 74	10.50	" 125	E 10.10	" 10	13.16
" 26....	2.74	" 75	1.93	" 126	E 9.52	M.L. 1	E 26.50
" 26 A..	.24	" 79	.43	" 127	8.02		
" 27....	11.24	" 80	1.27	" 128	E 9.25		
" 28....	14.39	" 81	1.10	" 129	E 9.75		
" 29....	12.86	" 82	2.27	" 131	E 24.00		
" 30....	1.27	" 83	1.30	" 138	E 12.50		
" 31....	1.56	" 84	1.93	" 139	E 1.25		
" 32....	.09	" 85	14.61	" 140	E 13.00		
" 34....	14.07	" 86	1.18	" 141	E 2.50		
" 35....	.12	" 87	1.96	" 142	E 10.00		
" 36....	5.75	" 88	7.41	" 143	E 7.00		
" 38....	7.35	" 89	1.20	S.L. 1	4.29		
" 39....	.63	" 90	6.83	" 2	1.16		
" 40....	1.50	" 94	5.08	" 3	15.86		

"E" Equals estimate mileage

Total 996.22

Size of Telephone Wire used on Telephone Lines
COMPLETED OCT. 31, 1914-OCT. 31, 1915

Section No.	Mileage	Gauge	Section No.	Mileage	Gauge	Section No.	Mileage	Gauge
		No.			No.			No.
L.T. 84	1.93	10 C.C. Steel	L.T. 99	19.18	10 B.W.G. Iron	Lt. 100	1.25	9 B.W.G. Iron
" 88	7.41	" "	101	16.91	" " "	" 123	14.60	" "
" 89	1.20	" "	102	1.48	" " "	" 124	9.83	" "
" 90	6.83	" "	103	9.98	" " "	" 126	9.52	" "
" 95	10.15	" "	104	8.50	" " "	" 127	8.02	" "
" 96	6.58	" "	105	7.40	" " "	" 128	9.25	" "
" 97	4.00	" "	106	6.10	" " "	" 129	9.75	" "
" 98	9.27	" "	108	13.03	" " "	E.F.L.1	22.15	" "
S.L. 15	1.00	" "	111	5.84	" " "	" 2	9.22	" "
St.L. 5	14.08	" "	112	3.48	" " "	" 3	6.78	" "
			113	14.20	" " "	" 4	15.97	" "
			114	8.90	" " "	" 5	15.70	" "
			118	.37	" " "	" 9	11.73	" "
			119	.09	" " "	" 10	13.16	" "
Total	62.45		Total.	115.46		Total.	156.93	

Grand Total 334.84

Size of Telephone Wire used on Telephone Lines
UNDER CONSTRUCTION OCT. 31, 1915

Section No.	Mileage	Gauge	Section No.	Mileage	Gauge	Section No.	Mileage	Gauge
		No.			No.			No.
L.T.125	10.10	9 B.W.G. Iron.	L.T. 140	13.00	9 B.W.G. Iron.	E.F.L. 7	11.50	9 B.W.G. Iron.
" 131	24.00	" "	" 141	2.50	" "	" 8	12.00	" "
" 138	12.50	" "	" 142	10.00	" "	M.L. 1	26.50	" "
" 139	1.25	" "	" 143	7.00	" "	.....	.....	.....
						Total.	130.35	

SECTION III

OPERATION OF THE SYSTEMS

NIAGARA SYSTEM

From an operating standpoint the fiscal year ending Oct. 31st, 1915, has been the most satisfactory yet experienced in the history of the Niagara System. The Ontario Power Company, as in former years, supplied the Commission with an almost ideal power service, and took care of the increased load on their plant in a very creditable manner.

That only two total system interruptions, each of momentary duration, occurred on the Niagara System during the year may be said to be partly due to the excellent condition of the high-tension line insulation. Notwithstanding the far-reaching network of 600 miles of low-tension lines, with the additional lines required to serve 28 new customers, the reliability of the service on the low-tension lines has been also maintained, as indicated by the small number of interruptions which occurred on the low-tension feeders.

During the summer electrical storms occurred on 49 days. The large majority of these storms did not traverse the system, but appeared to concentrate in the vicinities of Cooksville, Stratford, St. Marys and Windsor. The storms at Cooksville and Windsor were particularly frequent and severe.

The high-tension transmission line has given entirely satisfactory operation during the past year. The insulator trouble mentioned in previous reports has been eliminated to the extent that not a single failure occurred during the year.

The 162,000 suspension and strain units on the original line sections were tested twice for dielectric strength, and the result of these tests precludes any misapprehension as to the future performance of the insulators. The preliminary tests carried out on the new section of the high-tension lines showed conclusively that the condition of the insulator units is excellent.

It has been found that considerable re-construction work on old lines and readjustment details in connection with new lines after being placed in operation could be economically taken care of by the line maintenance gangs along with the regular patrol and maintenance work. In the early part of the year this department was utilized in making final adjustments of the span sags in the cable and ground wire on the high-tension transmission line between St. Thomas and Windsor, and also some special construction work at the railway crossings on this section of line.

On account of the increased load on the Niagara system it was deemed advisable to replace the No. 3/0 B. & S. gauge aluminum cable strung between Dundas and London on the north side of the western loop, exclusive of a part of the section between Berlin and Stratford, with steel reinforced aluminum cable. This work included delivery and erection of new cable, new line hardware and the delivery of the old cable on reels at the railway stations for shipment to different points on the Commission's systems, where it was used in the construction of low-tension lines. On the line section between Dundas and Guelph No. 6/0 steel reinforced aluminum cable was erected and No. 5/0 steel reinforced on the balance of the sections. This work was commenced on February 18th and finished on June 10th.

and was carried out in such a way that the north half of the western loop was available for operation at short notice a great deal of the time.

There are now three separate circuits of steel reinforced aluminum cable between Dundas and London, with the exception of the section between Berlin and Stratford.

Some slight changes were made in the adjustment of the cable sag and line supports of the copper conductors on the Toronto entrance towers.

The line maintenance department were employed in completing some minor construction details on the new high-tension tower line between Niagara Falls and Dundas. This line was placed in parallel operation with the old tower line on February 28th, with the result that a decided improvement was effected in voltage regulation on the entire system in addition to the increased security of the service.

The new low-tension steel tower line supporting four circuits of No. 3/0 B. & S. gauge copper cable between the Dundas high-tension station and Hamilton was turned over for operation on October 4th.

On the majority of the lines which have been in operation four and five years rather extensive tree trimming was required in order to provide the necessary clearance, which had been decreased by the growth of the trees.

The line maintenance department have continued the installation of sectionalizing and tap switches, which have proved very essential for efficient operation on account of the large number of branch lines being erected. These switches were installed on the lines serving the following municipalities:—Norwich, Beachville, Cheltenham, Fergus, Elora, Clinton, Seaforth, Goderich, and the Electric Steel & Metal Co.'s plant at Welland. Extensions were made to the wood pole low-tension line entrances at Berlin and Stratford high-tension stations to accommodate new lines recently erected in these districts.

The electrical and mechanical equipment of the high- and low-tension stations has given practically no trouble during the past year, which is partly accounted for by a periodic and rigid inspection, including special monthly tests of the insulating oil of the transformers and oil switches. The station maintenance men, in addition to the regular maintenance of the station equipment, have been employed to a considerable extent on re-construction.

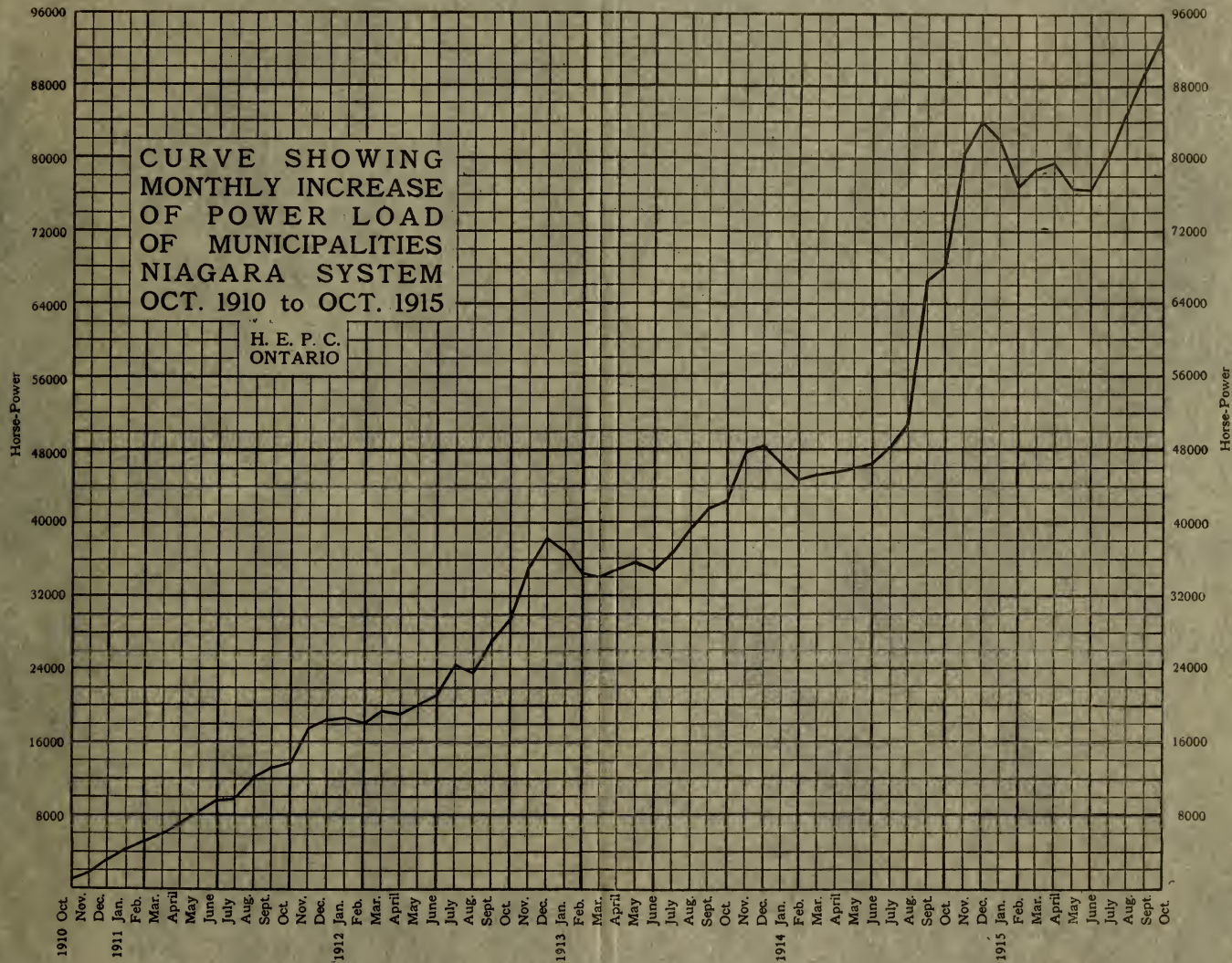
The station equipment of the Commission's private telephone system has been given a general overhauling during the past year. The trouble that was occasionally experienced in the maintenance of this equipment, due to inductive disturbance from the power lines, has been successfully overcome by the installation of a new type of protective apparatus, including an insulating transformer designed and installed by the telephone inspector. This equipment allows the use of standard switchboard apparatus and telephones. In the high-tension stations where this equipment has been installed not a single case of damage, due to inductive disturbances on the line, has occurred. Since the installation of this equipment the number of interruptions to the telephone service has been greatly reduced and the system generally improved. In addition to the above, the maintenance costs of the switchboard equipment, although never excessive, have been reduced at least 75%. The cost of maintenance of the telephone equipment at the customers' stations has been reduced 25% where these stations are fed from the high-tension stations having this equipment in service. The telephone switchboards in all of the high-tension stations have been overhauled and rewired during the past year. The telephone maintenance men have been also employed on the installation of the telephone equipment in the Commission's new stations.

The work of improving the interior and grounds surrounding the high-tension stations has been continued by the operators during the past summer. In most of the stations the floors and steel work have been re-painted and numerous improvements of a minor nature effected. At the new stations and stations which have been extended, roadways were built or re-located. Approaches were also built to the new storehouses which have been erected on the station grounds. Each year sees additional improvement at the stations, which is accomplished at practically no extra cost to the Commission.

It might be mentioned here that it was deemed advisable by the Commission to provide police protection of the Commission's property at the present time. Accordingly, arrangements were completed through the Ontario Government, and at each of the high-tension stations two operators were sworn in and vested with the powers of special Provincial constables for the protection of the Commission's property. Incidental to this procedure arms and ammunition were placed at the different stations. Additional protection has been afforded by the military authorities.

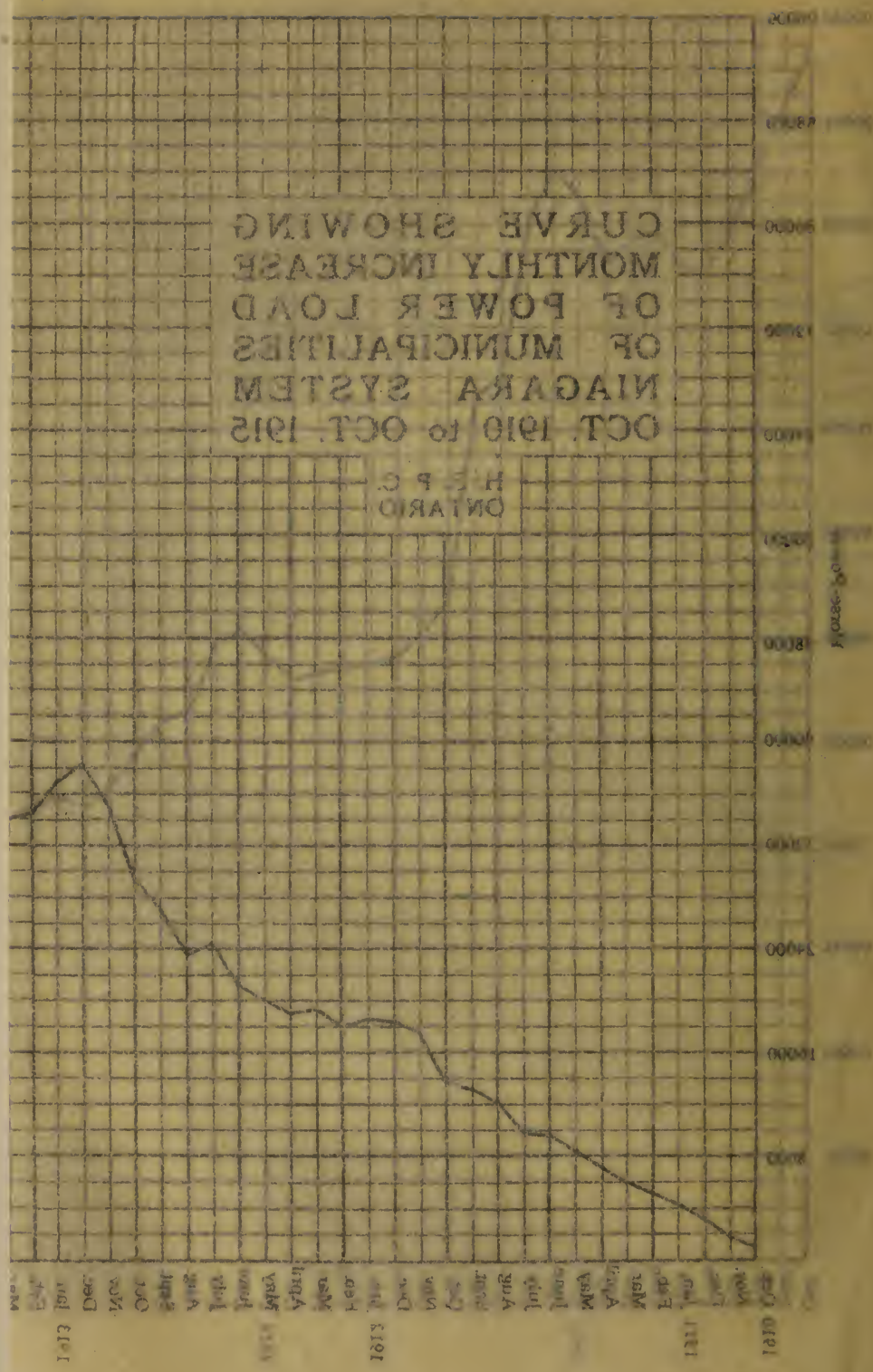
The tables given below show the load demands of the different municipalities in October, 1914, and October, 1915, as well as the increase during the year. In view of the existing commercial condition these figures are particularly interesting.

The plotted load curve on another page shows the combined load demand of the municipalities each month from October, 1910, to October, 1915.



OCT. 1910 TO OCT. 1912 NIAGARA SYSTEM OF MUNICIPALITIES OF POWER LOAD MONTHLY INCREASE CURVE SHOWING

H. E. P. C.
ONTARIO



Municipality	Load in H.P. Oct., 1914.	Load in H.P. Oct., 1915.	Increases in H.P.
Toronto	21,508.5	32,748	11,239.5
Dundas	312.5	362	49.5
Hamilton	6,340.5	7,694.5	1,354
Waterdown	72.5	63	....
Caledonia	33.5	40.2	6.7
Hagersville	76	106	30
London	5,047	5,971.5	924.5
Thorndale	13	28.4	15.4
Thamesford	37	19.3	....
Guelph	1,427.5	1,954.5	527
Ontario Agricultural College	142.5	153	10.5
Central Prison Farm	47	203.5	156.5
Rockwood	29.5	34.2	4.7
Georgetown	119.5	266.5	147
Acton	69.5	84.5	15
Preston	804	973	169
Galt	1,103	1,602	499
Hespeler	212	368.5	156.5
Breslau	23	21.5	....
Berlin	1,816.5	2,285.5	469
Waterloo	453	717	264
Elmira	59	91	32
New Hamburg	104.5	84.5	....
Baden	149	157	8
Stratford	837.5	1,179.5	342
Mitchell	111	123.5	12.5
Seaforth	225	275	50
Clinton	95	98	3
Goderich	214.5	217	2.5
St. Marys	342	339	....
Woodstock	840	1,048	208
Ingersoll	321.5	740	418.5
Tillsonburg	205	233	28
Norwich	84.5	100.5	16
Beachville	131.5	132.5	1
St. Thomas	1,662	1,658.5	....
Pt. Stanley	66	68.5	2.5
Brantford	974.5	1,552.5	578
Paris	222.5	381	158.5
Pt. Credit	55	57.5	2.5
Weston	149	178.5	29.5
Brampton	493	539	46
Milton	143.5	287	143.5
Mimico	114	127.5	13.5
Mimico Asylum	32.2	35	2.8
Provincial Brick Yard	199	171	....
New Toronto	10	80.5	70.5
Toronto Township	95	62.5	....
Cooksville	31	23	....
Dixie			
Windsor	590	1,216	626
Walkerville	33.5	777.5	744
Elora	80.5	51.6	....
Fergus	53.5	68.5	15
Welland	500	3,038.5	2,538.5
St. Catharines	1,019	2,158.5	1,139.5
Pt. Dalhousie	119	104.5	....

A list of the municipalities connected to the Niagara System during the past year is given below:

Municipality	Date connected	Initial Load H.P.	Present Load H.P.	Increased H.P.
Strathroy	Nov. 30, 1914.....	27	143.5	116.5
Drumbo	Dec. 1, 1914.....	14	18	4
Plattsville	Dec. 1, 1914.....	14	32.2	18.2
Woodbridge	Dec. 2, 1914.....	24	32.2	8.2
Ayr	Dec. 5, 1914.....	37.5	35.5	....
Princeton	Dec. 18, 1914.....	7	9.8	2.8
Embro	Dec. 22, 1914.....	22	25	3
Chatham	Jan. 15, 1915.....	138	431.5	293.5
Lucan	Jan. 21, 1915.....	55.5	33.5	....
Bolton	Jan. 26, 1915.....	48.5	34.8	....
Mt. Brydges	Feb. 1, 1915.....	37.5	26	....
Wallaceburg	Feb. 3, 1915.....	141	177	3.6
Delaware	Mar. 1, 1915.....	5.5	7.2	1.7
Tilbury	Mar. 3, 1915.....	71	60.3	....
Simcoe	Mar. 9, 1915.....	56.5	114	57.5
Waterford	Mar. 10, 1915.....	51	35	....
Lambeth	Mar. 12, 1915.....	4	50.9	46.9
Grantham Twp.	Mar. 16, 1915.....	10	12.3	2.3
Dresden	Mar. 30, 1915.....	87	70	....
Dorchester	Mar. 31, 1915.....	10.5	20.7	10.2
Comber	April 20, 1915.....	16	19.5	3.5
Burford	May 6, 1915.....	14.7	45.6	30.9
Bothwell	Aug. 17, 1915.....	31.5	28	....
St. George	Aug. 17, 1915.....	29.5	45.6	16.1
Dutton	Aug. 27, 1915.....	39.5	47	7.5
Thamesville	Sept. 14, 1915.....	52.9	52.9	....
Blenheim	Oct. 20, 1915.....	53.6	53.6	....
Lynden	Oct. 22, 1915.....	6.7	6.7	....

The Capital Investment of the Niagara System in operation at October 31st, 1915, is as follows:—

Right-of-Way	\$966,340 08
Steel Tower Transmission Lines	3,426,074 78
Telephone Lines	129,706 69
Relay System Lines	54,537 32
Conduit System, Ontario Power Co. to Niagara Station	94,736 49
Wood Pole Lines	1,523,214 36
Transformer Stations	2,479,346 33
Distributing Stations	150,593 34
Total	\$8,824,549 39

The total expenditures in connection with the operation and maintenance of the Niagara System for the fiscal year 1914-15 are as follows:—

Operators' Salaries and Expenses, including Supplies	\$60,086 90
Maintenance of Steel Tower Lines	48,660 02
“ Telephone and Relay Lines	8,112 46
“ Low-tension Lines	16,854 39
“ Transformer Stations	34,242 20
“ Distributing Stations	4,428 30
Administration and General Office Expenses	48,026 00
Total	\$220,410 27
Interest on Invested Capital	\$327,346 05
Cost of Power at Niagara Falls	718,895 50
Total Expenditure	\$1,266,651 82

A summary of the Financial Statement of the Niagara System operation for the fiscal year ending October 31st, 1915, is given below:—

Receipts

Power delivered, including charges for Administration, General Expense, Operation, Maintenance and Interest	\$1,506,280 85
---	----------------

Disbursements

Power purchased, including losses in Transmission and Transformation, Administration, General Expense, Operation, Maintenance and Interest	1,266,651 82
Surplus applicable to Sinking Fund and Depreciation Reserve Account	\$239,629 03

ST. LAWRENCE SYSTEM

During the last fiscal year the load on the St. Lawrence System has been doubled. The Municipality of Brockville was first supplied with Hydro power on April 24th, and at the present time the load taken by this municipality is 335 h.p. The Village of Williamsburg was first supplied on April 3rd with an initial load of 10 h.p. The demand of this village has increased to 30 h.p. The loads supplied to Prescott, Winchester, and Chesterville have all shown satisfactory increases.

No trouble has been experienced in the satisfactory operation of the Commission's lines and stations in this district. During the month of April the system power supply from the New York & Ontario Power Co. was transferred from Morrisburg to Iroquois. The hydraulic plant at Iroquois is at present working at full capacity with a load factor of well over 90%.

ST. LAWRENCE SYSTEM

The Operating Capital Investment of the St. Lawrence System to October 31st, 1915, is as follows:—

Transmission Lines	\$147,651 94
Distribution Stations	20,542 02
	<hr/>
	\$168,193 96

The following is a statement of the Operating and Maintenance Expenses of the St. Lawrence System for the fiscal year ending October 31st, 1915, together with the Revenue derived from same:—

Revenue

Prescott Power Accounts	\$4,671 47
Winchester "	2,060 66
Chesterville "	2,035 95
Brockville "	4,013 65
Williamsburg "	266 23
	<hr/>
	\$13,047 96

Expenditures

Operator and Patrolman's Salary and Expenses, and proportion of Administration and General Office Expense	\$1,320 75
Interest on Capital Investment	5,744 86
Cost of Power purchased	5,405 60
	<hr/>
	12,471 21
Net Surplus applicable to Depreciation Reserve.....	<hr/>
	\$576 75

PORT ARTHUR SYSTEM

The Commission's system at Port Arthur, including the transformer station and transmission lines, have provided entirely satisfactory service during the year. There were especially few interruptions, and no failures of the station equipment have been reported.

During the latter part of the year an agreement was reached with the City of Port Arthur whereby the division of the load carried by the municipal hydraulic plant at Current River and the Commission's sub-station was placed in the hands of the Commission's operators. This central control of the load will no doubt prove a more efficient method of operation with added profits for the City of Port Arthur.

The average load for the year supplied from the Commission's station was 2,350 h.p. The excess power required during peak load periods was carried by the Current River plant. Consequently the reserve horsepower on demand by the Commission from the Kaministiquia Power Co. was not increased.

PORT ARTHUR SYSTEM

The Capital Investment for the Port Arthur System to October 31st, 1915, is as follows:—

Transmission Lines	\$22,162 17	
Transformer Stations	85,873 64	
		<u>\$108,035 81</u>

The Operating and Maintenance Expenses for the fiscal year ending October 31st, 1915, are as follows:—

Operators' Salaries and Expenses, including Operating Supplies, and proportion of Administration and General Office Expenses	\$5,839 02
Interest at 4% per annum	4,293 88
Sinking Fund at 1.8% per annum	1,932 28
Cost of Power	37,458 99
	<u>\$49,524 17</u>

A Financial Statement of Operation for the fiscal year ending October 31st, 1915, is given below:—

Sum of monthly loads delivered and value, including charges for Administration, General Expenses, Operation, Interest, Sinking Fund and Depreciation	28,150.5 h.p.	\$53,066 72
Sum of monthly loads purchased and value, including Administration, General Expense, Operation, Interest and Sinking Fund	28,150.5 h.p.	49,524 17
		<u>\$4,542 55</u>
Surplus applicable to Depreciation Reserve		\$3,542 55

SEVERN SYSTEM

The operation of the Severn System during the past year was very satisfactory. The power service was maintained with an excellent degree of reliability, and exceedingly few interruptions occurred.

The transmission system now consists of approximately 75 miles of double circuit and 31 miles of single circuit 22,000 volt lines, which connects the twelve municipalities of Midland, Penetang, Collingwood, Barrie, Orillia, Elmvale, Stayner, Creemore, Waubauskene, Coldwater, Pt. McNicoll and Victoria Harbor.

These municipalities are all located in the County of Simcoe, and are supplied with power from the Commission's generating station at the Big Chute on the Severn River.

The Waubaushene and Pt. McNicoll transformer stations and distribution systems were placed in operation on November 13th and December 3rd, respectively. The local distribution system at Victoria Harbor, which had been operated and maintained by the Commission since July 1st, 1914, was taken over by the local Hydro Department on October 1st, 1915, and is now being operated by them.

The maximum demand of the system during the year was approximately 3,000 h.p., and the Commission have in view the increasing power requirements of the municipalities.

During the month of October, 1915, work was commenced on stringing a No. 9 B. & S. gauge iron telephone circuit on the new pole line in the right-of-way between the Waubaushene switching tower and the power house. This additional telephone circuit was considered necessary on account of the inaccessibility during certain seasons of the year of the country through which these lines pass and the consequent difficulty in making repairs in case of trouble.

When completed there will be provided two telephone circuits on separate pole lines from the Big Chute plant to the operating centre at Waubaushene, and the reliability of the telephone communication will be greatly increased.

SEVERN SYSTEM

The Operating Capital Investment of the Severn System to October 31st, 1915, is as follows:—

Big Chute Generating and Transformer Station	\$349,529 31
Transmission Lines	316,306 54
Distributing Stations	68,743 39
	<hr/>
	\$734,579 24

The following is a statement of the Operating and Maintenance Expenses of the Severn System for the fiscal year ending October 31st, 1915, together with the revenue derived from same:—

Revenue

Midland Power Accounts	\$7,972 20
Penetang "	9,600 71
Collingwood "	11,141 25
Barrie "	12,007 01
Coldwater "	1,009 36
Elmvale "	1,697 26
Stayner "	2,469 59
Creemore "	2,500 75
Orillia "	4,800 00
Waubushene "	509 52
Port McNicoll "	532 27
Victoria Harbor Power Accounts	2,525 97
	<hr/>
	\$56,765 89

Expenditures

Operators and Patrolmen Salaries and Expenses, and proportion of Administration and General Office Expenses	\$14,771 53
Interest on Capital Investment	29,302 11
	<hr/>
	44,073 64
Surplus applicable to Sinking Fund and Depreciation Reserve Account	\$12,692 25

WASDELLS FALLS SYSTEM

The first year's operation and maintenance of the Commission's system in the Wasdells Falls District was successfully concluded in the month of October. The performance of the generating station and approximately 40 miles of 22,000 volt and 23 miles of 4,000 volt transmission lines was entirely satisfactory, and no difficulty was experienced in supplying a practically uninterrupted power service to the municipalities on this system.

It has been found that the arrangement made between the municipalities and the Commission for co-operation in the maintenance and operation of the local distribution systems and the Commission's lines and stations has proved very efficient and economical and will be continued in the future.

During the year a turbine-driven pump was installed at the generating station for unwatering the wheel pits for the purpose of examination or repairs to the turbines. The winch which lifts the stop-logs for the control of the water in the river was equipped with motor drive for electrical operation.

On account of the isolated location of the power house the Commission deemed it advisable to provide living accommodation for the operators near the plant. Accordingly a modern type of seven-roomed house was erected on the Commission's property. The house is supplied with water by the pneumatic system from a well sunk on the edge of the river bank. Electrical heating has been provided, and telephone communication with the power house.

The local 4,000 volt distribution system at Brechin was first supplied with power from the Commission's transforming station at Beaverton on December 19th.

While the present commercial depression has interfered somewhat with the growth of the load in some of the municipalities, the outlook for the future is very reassuring.

WASDELL SYSTEM

The Operating Capital Investment of the Wasdell System to October 31st, 1915, is as follows:—

Wasdell Falls Generating and Transformer Station Plant	\$132,906 97
Transmission Lines	95,222 47
Distributing Stations	13,430 44
	<hr/>
	\$241,559 88

The following is a statement of the Operating and Maintenance Expenses of the Wasdell System for the fiscal year ending October 31st, 1915, together with the Revenue derived from same:—

Revenue

Beaverton Power Account	\$3,681 00
Cannington "	3,302 03
Sunderland "	1,911 36
Woodville "	3,265 56
Brechin "	2,148 40
	<hr/>
	\$14,308 35

Expenditures

Operators and Patrolmen's Salaries and Expenses, including Supplies	\$3,808 33
Administration and General Office Expenses	1,465 01
Interest on Capital Investment	9,035 01
	<hr/>
	14,308 35

TOTAL CAPITAL INVESTMENT TO OCTOBER 31st, 1915

Following is a statement of Expenditures on Capital Account, including Niagara, Severn, Wasdell, St. Lawrence, Eugenia, Port Arthur, Muskoka, Renfrew and Ottawa Systems, also construction chargeable, stock on hand and tools.

Niagara System—Transmission Lines

Right-of-Way	\$966,340 08	
Steel Tower Lines	3,426,074 78	
Telephone Lines	129,706 69	
Relay System Lines	54,537 32	
Conduit System (Ont. Power Co. to Niagara Station) ..	94,736 49	
		\$4,671,395 36
Dundas to Hamilton Steel Pole Line	\$52,828 95	
		52,828 95
Wood Pole Lines	\$1,523,214 36	
Wood Pole Lines in course of construction	106,595 56	
		1,629,809 92
Welland and St. Catharines District Lines	\$16,427 53	
		16,427 53
Rural Line Construction	275,118 03	
		275,118 03

Transformer Stations

Stations	\$2,479,346 33	
Stations and Extensions in course of construction	106,604 14	
		2,585,950 47
Distributing Stations	150,593 34	
Distributing Stations in course of construction	2,776 25	
		153,369 59

Severn System

Big Chute Power Development, including Generating and Transformer Stations	\$349,529 31	
Transmission Lines	316,306 54	
Distributing Stations	68,743 39	
Engineering on Proposed Stations	7 47	
		734,586 71

Wasdell System

Power Development, including Generating and Transformer Station	\$132,906 97	
Transmission Lines	95,222 47	
Distributing Stations	13,430 44	
Engineering on Proposed Lines	11 56	
		241,571 44

St. Lawrence System

Transmission Lines	\$147,651 94	
Distributing Stations	20,542 02	
Engineering on Proposed Lines	412 88	
		168,606 84

Port Arthur System

Transmission Lines	\$22,162 17	
Transformer Stations	85,873 64	
		108,035 81

Eugenia System

Power Development, including Generating and Transformer Station	\$599,934 62	
Transmission Lines	242,800 00	
Distributing Stations	16,608 29	
	<hr/>	859,342 91

Muskoka System

South Falls Power Development, including Generating and Transformer Station	\$5,310 27	
Transmission Lines	28,230 41	
	<hr/>	33,540 68

Renfrew System

Round Lake Storage Dam	\$20,758 74	
	<hr/>	20,758 74

Ottawa System

Meter Equipment	\$432 39	
	<hr/>	432 39

General Accounts (Chargeable)

Construction Work repayable	\$354,526 34	
Sales to Municipalities	109,704 18	
Renfrew District Operating Charges	937 05	
Cable Reels	6,604 82	
	<hr/>	471,772 39

General Accounts (Capitalized)

Office Furniture and Equipment	\$20,312 50	
Unexpired Insurance (Employees)	2,866 87	
Unexpired Insurance (Furniture and Equipment).....	76 00	
Stationery on hand	5,494 40	
Office Furniture and Equipment (Electrical Inspection Department)	5,779 97	
Toronto Storehouse, Testing Laboratory, Garage and Machine Shop	83,041 01	
Dundas Storehouse	1,586 04	
Automobiles and Trucks	18,552 85	
Office Building	211,863 77	
	<hr/>	349,573 41

Stock and Tools

Line and Station Construction Stock on hand	\$157,243 21	
Line Maintenance Stock	26,786 39	
Station Maintenance Stock	17,426 58	
Operating Department Equipment	220 96	
	<hr/>	201,677 14
Line and Station Construction Tools and Equipment..	\$5,325 65	
Line and Station Maintenance Tools	2,097 26	
	<hr/>	7,422 91
Total Expenditure		\$12,582,221 22

PROVINCIAL EXPENDITURES

Provincial Account For Fiscal Year 1914-1915

Engineering assistance to the non-operating Municipalities; the gathering of data throughout the Province for statistical purposes; reports on Municipal operation, and also the making of estimates for the delivery of power for Municipalities arranging to take current..	\$46,038 08	
Municipal estimates for power supply and rate investigation	3,326 14	
Hydrographic surveys, storage surveys for the Province, reports and investigations of power sites and reports on stream flow	41,604 55	
Reports on overhead and underground construction for Municipalities, Rural Districts, and auxiliary plant investigations	4,514 42	
Engineering investigations for Municipalities, testing, and reports on proposed Municipal Electrical Railways...	45,925 18	
Rules and Regulations, inspection and installation of systems for the utilization of electric energy	4,770 85	
Demonstration at Rural and Urban Fairs	1,072 68	
Administration and General Expense	25,369 27	
		\$172,621 17
Niagara Surveys		21,442 12
Electrical Inspection—Balance of Operating Expenses for period June 1st to October 31st, 1915		17,630 33
Executive		7,797 22
		<u>\$219,490 84</u>

BALANCE SHEET

OCTOBER 31st, 1915.

Assets

Sundry Expenditures, per list	\$12,582,221 22
Warrantable advances	23,033 96
Unpaid Power Bills, Oct. 31st, 1915	247,502 76
Cash on hand	126,068 06
	<u>\$12,978,826 00</u>

Liabilities

Provincial Treasurer	\$12,315,712 08
Niagara System, Surplus applicable to Sinking Fund and Depreciation Reserve Account	583,754 74
Severn System, Surplus applicable to Sinking Fund and Depreciation Reserve Account	16,774 46
Port Arthur System, Surplus applicable to Sinking Fund and Depreciation Reserve Account	24,212 85
Welland System, Surplus applicable to Sinking Fund and Depreciation Reserve Account	306 06
St. Lawrence System, Surplus applicable to Depreciation Reserve	676 54
Ottawa System, Surplus applicable to Sinking Fund	5 06
Storehouse and Laboratory Operation Surplus	7,106 64
Garage and Machine Shop Operation Surplus	1,724 57
Interest Account	28,553 00
	<u>\$12,978,826 00</u>

SECTION IV

MUNICIPAL WORK

MUNICIPAL ADVICES

Preliminary Work

Petitions were received from residents in parts of the following townships, and based on these petitions meetings were held in these townships at which committees and secretaries were appointed to handle the preliminary work in circulating petitions and in getting contracts signed.

A standard schedule of rates was forwarded to these committees to be used in connection with this work:

Louth Township, East Flamboro Township, Beverley Township, North Dumfries Township, Downie Township, Waterloo Township, Barton Township, Townsend Township, Woodhouse Township, Nelson Township, Southwold Township, Yarmouth Township, Ancaster Township.

The work of building distribution systems in the following municipalities was completed and power turned on to supply consumers during the early part of the year. The systems in all of these municipalities are now operating very satisfactorily and the number of consumers and load has increased:

Ayr, Drumbo, Plattsville, Embro, Waterford, Lucan, Comber.

Numerous requests were received for a representative to investigate the requirements of a Hydro-Electric system, and in such cases an engineer visited the municipalities and obtained the necessary information. Estimates showing the figure at which power could be supplied to the municipalities were forwarded by the Commission. A number of valuations and investigations in connection with utilities have also been made for the municipalities. Special investigations have been carried on in connection with the design of outdoor substations, the effects of sleet storms on overhead pole lines, joint pole line and standard pole line specifications.

Engineering assistance has also been given to a great many of the operating towns on matters pertaining to rate application, economical operation of their local systems and increasing the lighting and power business.

During the year work of the foregoing nature was taken care of by the Department in the following municipalities:

Alexandria, Almonte, Arthur, Artemesia Township, Athens, Arva.

Barrie, Beaverton, Bracebridge, Brigden, Brockville, Burk's Falls.

Carleton Place, Campbellford, Cannington, Chatsworth, Chapleau, Chester-ville, Chesley, Clifford, Cobden, Cobalt, Cochrane, Coldwater, Crediton.

Dashwood, Dundas County, Dundalk, Durham.

Eastwood, East Zorra Township, Elk Lake, Elmvale.

Flesherton, Fort Frances.

Grand Valley, Granton, Gravenhurst, Grenville.

Haileybury, Hanover, Havelock, Hastings, Hensall, Hepworth, Highgate, Holstein.

Ilderton.

Kemptville, Kintore, Kirkton, Komoka.

Lakefield, Lanark, Longford.

Maidstone Township, Markdale, Maxville, Meaford, Merrickville, Mount Forest. New Dundee, New Liskeard, Newbury, North Bay, North Bay District, Norwood.

Oil Springs, Orangeville, Ottawa.

Paipoonge Township, Perth, Penetang, Peterborough, Port Arthur, Port McNichol (Tay Township), Prescott, Priceville.

Rainy River, Rochester Township, Rodney.

Sault Ste. Marie, Scarboro Township, Shallow Lake, Shelburne, Shedden, South Norwich Township, Smith's Falls, Stayner, Sunderland, Spencerville.

Tara, Tay Township (Port McNichol and Waubauskene), Trent Valley District, Trenton.

Vaughan Township, Victoria Harbor.

Waubauskene (Tay Township), Westport, West Lorne, Wilmot Township, Winchester, Woodham, Woodville.

Zurich.

Special investigations were made by the Department for the purpose of serving the following corporations. Contracts for power were drawn up and submitted.

C. P. Ry. Pt. McNicoll Terminal.....	800 H.P.
National Portland Cement Co. Durham.....	1,300 "
Can. Cement Co., Shallow Lake.....	800 "

Valuation of the Pine River Light & Power Company's plant was made by the engineers of the department to determine the possibility of the purchase of this property by the Commission.

Notes on engineering assistance rendered other municipalities are given in the reports following.

Ailsa Craig

At the request of the municipality, an estimate of the cost of a distribution system was made and details of this estimate forwarded to them for their consideration. The municipality was also advised that 100 h.p. could probably be supplied for \$49.67 at 4,000 volts. The enabling by-law was submitted to the ratepayers on January 1st and the money by-law in June. Both of these by-laws carried.

At the request of the municipality, the distribution system was installed under the supervision of our engineers, and it is expected that power will be available early in the coming year.

Atwood

During the year estimates for the supply of Hydro-Electric energy to the Village of Atwood, in conjunction with other towns in the district, have been prepared and submitted.

A representative of the Commission has also explained the necessary procedure to the council of the Township of Elma, in which Atwood is situated.

The cost of power to the village, based on 50 h.p. at 4,000 volts is \$53.04 per h.p. per year.

Aylmer

An engineer visited this municipality and obtained detail information in connection with their power requirements. The municipality at present own and operate a steam plant for supplying power and light in the municipality, and it is expected that Aylmer will consider the proposition of obtaining power from

the Commission on the expiration of their present contracts with the local manufacturing companies for the supply of free light, heat and power.

Berlin

Few cities in Ontario have made as good a showing under municipal ownership as Berlin. When Hydro was introduced the Electrical Department discarded a large amount of old equipment and purchased new apparatus to distribute Hydro-Electric energy. This year extensive changes have been made in their station, a new transformer building was erected and equipped with additional transformers and high tension switches; the distributing section was remodelled and new power and lighting feeder panels installed; future requirements were anticipated and arrangements made for regulating all or part of the load.

The work was done according to plans submitted by the Commission, under the supervision of the local manager, and assistance rendered by the Commission's engineers.

The load conditions in Berlin show a healthy growth, both in power and lighting. Practically an even day and night load is shown by the chart, which ideal condition accounts for the low rates being given to consumers.

Blenheim

The Hydro enabling by-law and a money by-law for \$14,000 were voted on and carried on May 10th. The municipal distribution system was remodelled under the supervision of the Commission's engineers and put into operation by Hydro power on October 20th.

An ornamental street lighting system has been installed consisting of approximately twenty 14 ft. cast iron ornamental standards of the Shepherd's Crook type equipped with 400 c.p. lamps, the extra cost of the ornamental system being paid for on the local improvement plan. A complete street lighting system was constructed in the municipality, the series system and nitrogen-filled lamps being used.

Bolton

The privately owned generating and distribution system was purchased by the village and the distribution system rebuilt under the supervision of the Commission. Hydro power was first received on January 26th, while the work of rebuilding the system was completed the following month.

Since the above date the Commission has given considerable assistance in the carrying on of the business and in making extensions to the system.

Brantford

At the request of the Brantford City Council, the Commission investigated the matter of removing the electric light and power, telegraph and telephone poles and wires from Colborne Street.

A full report was made by the Commission to the city council in connection with this matter, giving an estimate of the cost of making this change. This report has been forwarded and is now being considered by the Council.

The Hydro-Electric System and municipal railway have, during the year, been placed under one management.

Brantford Township

Brantford Township Council have decided to either purchase the Western Counties Electric Co's. distribution system in the districts of Parkdale, Echo Place and Grandview, or building new systems in these districts, so that all the houses in the district may be served and a suitable street lighting system installed.

A contract has been signed by the council agreeing to take power from the Commission, and steps are being taken to make the valuation of the Company's systems in these districts, after which negotiations will be commenced for purchasing, if possible, the company's system.

Rural petitions were received from the district adjoining our high tension station, and also from Mt. Vernon. Based on these petitions estimates were prepared and forwarded to the township council to be submitted to the ratepayers.

Brechin

Work on the low tension line from Beaverton and the distribution system in Brechin was carried on and completed under the supervision of this department.

Power was turned on from the Beaverton sub-station on December 19th, 1914. Operation has been carried on with the assistance of this department.

Brockville

The Commission's new 26,400 V. line from Prescott to Brockville and the new sub-station in Brockville were completed this year. Service was first given to Brockville from the St. Lawrence system on April 24. An insufficient supply of power on this system, caused by delay in making the expected development near Morrisburg, has necessitated the operation of the Brockville steam generating station during times of heavy load.

Burford

Hydro by-laws were voted on and carried in this municipality on October 2nd, 1914, and a new distribution system built under the supervision of the Commission's engineers and put into operation in March. The Commission on a request from the Police Trustees made an estimate on the value of the privately owned plant which is operating in the municipality and a report was submitted in this connection.

On the advice of the Commission the Police Trustees offered the owner \$1,000 for his plant, which he declined to accept.

The municipality signed a contract with the Commission for 50 h.p. at \$37.50 and at the present time the load on the municipal station is almost equal to the amount contracted for.

Burgessville

Burgessville was created a police village during the year, and at the request of the Police Trustees, who were elected in March, the following rates were forwarded for their consideration:

H.P.	Volts	Cost per H.P. per Year.
50	2,200	\$45.00
30	2,200	48.38

An engineer visited the municipality and obtained sufficient information to make an estimate of the cost of a distribution system, and this estimate is now being prepared, and it is expected that Hydro-Electric by-laws will be submitted to the ratepayers early next year.

Chatham

A complete new distribution system has been erected in the municipality during the year, the engineering in connection with which was superintended by the Commission. The system was placed partially in operation during the month of January and additional customers added as the work progressed. The system was entirely completed in August.

A combined sub-station and office building was erected on the main street, both of which are now complete.

An ornamental street lighting system has been installed and is being paid for on the local improvement plan. On King Street, 14 ft. ornamental cast iron standards equipped with 500 watt nitrogen-filled lamps, and on Queen and William Streets, 12 ft. ornamental cast iron standards have been installed, equipped with 400 watt lamps. The series system and nitrogen lamps have been used throughout both in connection with the ornamental and residential districts.

Arrangements have been made by the municipality to install a 50 h.p. motor in connection with the waterworks plant. Negotiations are at the present time under way for the supply of power to several large consumers who are erecting plants in the municipality.

Delaware

An estimate of the cost of a distribution system was made at the request of the municipality and a recommendation was forwarded to them to submit the money by-law to the ratepayers for \$4,000 to cover the cost of installing a distribution system. These by-laws were submitted to the ratepayers on January 4th and carried. At the municipality's request the distribution system was installed under the supervision of the Commission's engineers and power was turned on their system March 1st. Since that time the system has been operating quite satisfactorily.

Dorchester

At the request of the Police Trustees of the Village of Dorchester, an engineer visited this municipality and obtained sufficient information to make an estimate of the cost of a distribution system. This estimate was completed and forwarded to the Police Trustees who were advised to submit to the ratepayers a money by-law for \$4,300 for the purpose of installing a distribution system. The municipality were also advised that power could be supplied at the following rate:

H.P	Volts.	Cost per H.P. per year.
20	4,000	\$45.00

The Hydro-Electric by-laws were submitted on May 21st, and carried by large majorities.

Dresden

The distribution system in the municipality was remodelled and extended according to plans prepared by the Commission's engineers, and Hydro power was first put into operation in the municipality about April 1st, the Waterworks Department and Hydro-Electric Systems being operated under one management. The old rates have been materially reduced and a number of customers connected to the system which has been largely increased.

Dundas

Owing to the extensions being made in the high tension sub-station in Dundas, from which the municipality's system was supplied with power, it was necessary for the municipality to construct a new and separate distributing station.

This station was constructed under the supervision of the Commission's engineers at the municipality's request. Extensions have also been made to the distribution system to supply power in the surrounding districts which are being operated by Dundas as part of their system.

Dutton

The municipality were advised that 50 h.p. could be supplied for \$43.53 at 4,000 volts, and estimates of the cost of a distribution system were made and the municipality advised to submit a money by-law to the ratepayers for \$10,000 to cover the cost of a distribution system.

Both the enabling and money by-laws, on being submitted to the ratepayers, carried, and a distribution system was installed and put into operation in September. The engineering and supervision in connection with the installation of this system was handled by the Commission, the labor being supplied locally.

Exeter

The Commission were advised by the municipality that the present local company's franchise for the distribution of light and power in the municipality expires in December, 1915, and a request was received to send an engineer to Exeter to investigate local conditions and forward estimates of the cost of supplying power.

Detail information was obtained in connection with the municipality's requirements for a distribution system, and this estimate was forwarded by the Commission with a recommendation that a money by-law for \$20,000 should be submitted to the ratepayers to cover the cost of installing a distribution system.

A valuation was also made of the local company's plant, and a recommendation forwarded to the municipality in connection with same. The municipality were also advised that 200 h.p. could be supplied for \$43.70 per h.p. per year at 4,000 volts.

The Hydro-Electric by-law carried on July 16th, and the work of building a distribution system will be started early during the coming year.

Forest

An estimate has recently been submitted to the municipality of Forest in connection with the cost of Hydro power, and according to the engineer's estimates 100 h.p. can be supplied at a rate of \$63.27 per h.p. per year, and steps

are being taken to submit a Hydro enabling by-law to the electors at the coming municipal elections.

The municipality spent a considerable amount in connection with remodelling their municipal system during the past two years, and as the present system has a frequency of 25 cycles, very little extra expense would be required if Hydro power is introduced.

Ford City

This municipality being immediately adjacent to Walkerville, arrangements have been made to supply power from the Walkerville system, the customers in Ford City being handled as part of the Walkerville system.

On the request of the council a complete street lighting system has been installed in the municipalities under supervision of the Commission.

Goderich

During the year the electrically driven pump in the Waterworks Department, which was purchased with the advice of the Commission's engineers, was put in operation.

The pump is of sufficient capacity to enable the town to operate during off peak hours, for domestic supply, and also gives excellent fire protection.

Extensions to the system have been made to serve Ridgewood and Menestung Parks, also farmers outside the municipality. A noticeable feature in Goderich is the street lighting, which gives the town a very progressive appearance.

Grantham Township

In the early part of the year the Commission constructed a system in the lower part of the township to serve those of the petitioners in the district where the number of consumers per mile met the conditions on which the estimate was based, a total of 55.

The service in this district was turned on in March with an official opening at McNab.

As the demands from the other parts of the township from those which had signed applications for service were pressing, and a few new contracts had been secured, enough to bring the number of consumers per mile up to the standard on which the original estimate was based, arrangements were made by the township for the Commission to build extensions from Carlton Street to the Lake Road and Carlton Street to Homer, east of the canal, and west of the old ship canal in what is known as the Lot 2 hill, Martindale Road and Middle Road district. These extensions are under construction at present and will serve about 40 consumers to begin with.

Gravenhurst

The Commission has acquired from Gravenhurst all rights and title to that town's generating system at South Falls on the south branch of the Muskoka River, and has as well made a contract with Gravenhurst for a supply of power therefrom. The South Falls power is being remodelled and enlarged to serve Gravenhurst, Bracebridge and Huntsville, the former two towns at generator voltage (6,600 V.) and Huntsville at 22,000 volts.

Advice and assistance have likewise been given Gravenhurst on improving the town distribution system, and preparations have been made to discontinue the old system of flat rate service and substitute meter rates therefor.

Grimsby

At the request of the Grimsby town council an investigation was made in connection with the Cataract Power Co's. high tension lines in the municipality, and a full report in connection with this matter is being prepared.

Guelph

Assistance has been given this municipality from time to time by the department, particularly in the laying out of an ornamental street lighting system for the main streets. An investigation has also been made of the cost of furnishing power to the street railway and a new rate set for this service.

Hamilton

The Hamilton City Council applied to the Commission for a ruling in connection with the removal of all poles and overhead wires in the central part of the city, where underground conduits are installed.

A full report in connection with this matter has been prepared by the Commission's engineers, and an order to the companies owning these poles in question is now being prepared by the Commission.

Harriston

For some years the Town of Harriston has been requesting the Commission for a supply of Hydro power, but until this year it was not considered feasible, owing to the lack of co-operation with the other towns in that district. This year, however, the engineers of the Commission prepared estimates, based on feeding Milverton, Listowel, Atwood, Palmerston, Harriston and Clifford, over a 26,400 volt line running in a northerly direction from the Stratford-Goderich feeder, and submitted prices to the various municipalities.

The cost of 4,000 volt power at the various towns, ready to distribute, is as follows:

Milverton, 200 h.p.....	\$35.63
Listowel, 300 h.p.....	37.41
Atwood 50 h.p.....	53.04
Palmerston 200 h.p.....	40.82
Harriston 200 h.p.....	46.62
Clifford 100 h.p.....	55.84

Estimates on the cost of erecting new power lines, and remodelling the present system were also provided, and after explanations by the engineer and others the by-laws were submitted and passed.

The Water and Light Commission then requested assistance in the purchasing of material and handling the work, and at the present time all material has been ordered, the work on the station started, etc. Many manufacturers are anxiously awaiting power and prospects are bright for a good load. It is expected that Hydro power will be available in Harriston early in the year 1916.

Harwich

During the early part of the year petitions from residents immediately south of Chatham were received, and based on these petitions an estimate of the cost of supplying power to these customers was prepared and forwarded.

Based on these rates sufficient contracts were signed to warrant the building of a line, which was done in September, and with the result that a number of consumers are being supplied in this district.

Hespeler

During the year a money by-law was submitted to the ratepayers for sufficient money to install an electrically operated pump for domestic and fire purposes.

The street lighting system was extended and improved, and additional equipment installed to take care of additional lights.

From time to time the Commission's engineers visited the municipality to give advice in connection with various questions.

Huntsville

A power agreement was executed with Huntsville for the supply of 800 h.p. The South Falls plant on the Muskoka River has been acquired by the Commission from Gravenhurst and is being remodelled and enlarged to serve Huntsville as well as Gravenhurst and Bracebridge. A 22,000 volt line is being built from South Falls to Huntsville and a suitable sub-station is about to be built in Huntsville.

The town has, with the assistance of this department, made an agreement with the Anglo-Canadian Leather Company for power. Estimates have been prepared and plans submitted for rebuilding the town distribution system, and this work is being proceeded with under the direction of the Commission.

Iroquois

The Rapids Power Company, from whom the Commission's supply of power is secured for the St. Lawrence system, transferred its sub-station from Morrisburg to Iroquois in April. At this place power is being secured temporarily from the Beach power development on the canal.

Kingston

Upon request from the Utilities Commission this department has made extensive investigations in connection with local lighting and power rates, power costs, etc. Assistance was also given in connection with the purchase of electrical equipment and supplies.

Negotiations were also entered into for a limited supply of power from Kingston Mills.

A valuation of the municipal water, gas and electric systems was completed for the city and in addition certain tests were witnessed to determine the cost of electric power for railway purposes.

Lambeth

The municipality were advised that 25 h.p. could be supplied for \$46.56 at 4,000 volts.

Information was also forwarded to them that a distribution system would

cost approximately \$4,000 and they were recommended to submit a money by-law to the ratepayers for this amount.

Both the enabling and money by-laws were submitted to the ratepayers and carried by large majorities. A distribution system was installed and put into operation on March 15th.

Data is now being prepared in connection with the installation of an electrically driven domestic pump.

Listowel

Estimates on the cost of a supply of power for Listowel was prepared in conjunction with other towns (see report on Harriston) and forwarded in May, 1915. Upon receipt of this information the town authorities visited various Hydro towns and decided to submit the by-laws to the people.

Both the enabling and money by-laws carried, and a contract was entered into for 300 h.p. at 4,000 volts, the price being \$37.41 per h.p. year.

The cost of reconstructing the distribution system was estimated at \$7,000, and \$5,000 was also voted for suitable pumping equipment. Part of the material has already been purchased and the station transformers are ready for shipment. Power will be delivered early in 1916.

Lynden

The Police Village of Lynden voted on and passed a Hydro enabling by-law and a Hydro money by-law for \$4,750 on May 31st, and a new system was constructed under the supervision of the Commission's engineers and was put into operation in October, the contract being signed by the municipality for 120 h.p. at \$33.00 per h.p. per year.

Indications are at the present time that a large rural load will be developed in this district.

Markham

Acting on request of the local council assistance was given in the complete reconstruction of the distributing and street lighting system of the Village of Markham.

Power will be supplied by the old steam plant but the alterations to the lines have been made in a way to make them, as nearly as possible, suitable for operation on the Niagara system at such time as the Commission is in a position to furnish this service.

Milverton

Milverton entered into a contract with the Commission for a supply of 200 h.p. at 4,000 volts at \$35.63 per h.p. year, and also carried a money by-law for \$7,500 for the installation of a new distribution system.

The local Commission requested the engineers to purchase the material required and supervise the construction of the system. This work is now under way, and the system will be placed in operation early next year. Milverton is one of the towns which will receive power from the Stratford-Harriston line (see report on Harriston).

Morrisburg

A temporary supply of power to Williamsburg was secured from Morrisburg. The Commission's supply of power for the St. Lawrence system, secured through the Rapids Power Company, was transferred from Morrisburg to Iroquois.

Mt. Brydges

A recommendation was forwarded to the municipality to submit a money by-law to the ratepayers for an amount of \$4,200, which was the estimated cost of installing a distribution system.

This system was put into operation on Feb. 2nd, and is now operating quite satisfactorily.

Niagara Falls

The Commission, on request from the municipality, submitted prices for 2,000 and 5,000 horse-power to be delivered to the municipality. This information was submitted in June, and on November 3rd, a Hydro enabling by-law and a money by-law for \$14,000 were voted on and carried, the Money by-law being amount which the Commission estimated would be required to purchase apparatus to equip the municipal sub-station.

On November 30th, the Commission commenced supplying power for the operation of the municipal pumping station, the original contract of the Ontario Power Co. having expired.

The municipality will commence taking power for their municipal distribution system in November, 1916, which is the date ending their present contract for power with the Ontario Power Co.

Rates have been submitted to the municipality which will be put into effect the first of the year 1916.

North Norwich Township

Extensions were built and estimates prepared last year east from the line east of Norwich to Hatchley in Burford Township and north-east from the north line to New Durham to serve 28 applicants.

Later a petition was received from a group on the 5th line at the west end of the township. Estimates were prepared and the applications being signed by the group, an extension was built south from Newark on the L. T. poles one block and east and west on the 5th line $2\frac{1}{4}$ miles.

Later, petitions were received for an extension to the Hatchley line $\frac{1}{2}$ mile and an extension to the north line on Quaker Road 1 $\frac{1}{10}$ th miles. Estimates were prepared and extensions approved by the Commission.

At the end of the year, 48 contracts of 44 horse-power total were being served in this township.

The progress in this district since the first services were given has been more rapid than that in any other part of the Hydro system. This is purely a dairy district and not given to intensive work in any form.

Otterville

At the request of the Police Trustees of the Village of Otterville an estimate of the cost of power was made and forwarded to them as follows:

H.P.	Volts	Cost per H.P. per Year
50	4,000	\$45.00

A schedule of rates at which power and light could be sold to consumers was also forwarded for their consideration, and they were also advised to submit a money by-law to the ratepayers for an amount of \$4,500 to cover the cost of installing a distribution system in the municipality, and Hydro-Electric by-laws

are at present being advertised and will be submitted to the ratepayers early next year.

Owen Sound

Preparations for receiving Eugenia power by the municipality were made during the year.

A new sub-station and office building have been constructed and power will be delivered to the municipality in the month of November.

Parkhill

At the request of the municipality an engineer visited Parkhill and investigated their power requirements, obtaining sufficient information to make an estimate of the cost of a distribution system, and also sufficient details in connection with the present privately owned plant to make a valuation of same.

A valuation of this private plant was made and forwarded to the municipality, giving the replacement value, present value and value to the municipality.

Information was forwarded to the municipality, giving estimates of the cost of supplying them with 50-100 and 150 h.p. respectively.

Palmerston

The municipality of Palmerston opened correspondence during the year for a supply of power from the Commission. Estimates were submitted, and the Commission's engineers prepared plans and advised on the cost of installation. By-laws were submitted and carried, and after careful investigation in regard to prices of material, the Committee of the council requested the Commission to purchase the supplies and supervise the construction.

A supply of money was also voted for the purchase and installation of an electrically driven waterworks pump, it being estimated that a considerable saving could be made over the cost of pumping by compressed air, which is the method now used.

Work has already been started on the well and orders placed for the line material. It is expected that power will be available early in 1916. (See also report on Harriston.)

Petrolia

A Hydro enabling by-law and a money by-law for \$35,000 were submitted to the people on July 14th and carried, several public meetings having been held previously at which a representative of the Commission was present.

At the request of the council the valuation of the Petrolia Utility Company's electrical plant was made by the Commission's engineers and on the recommendation of the Commission the municipality offered the company \$11,285 for their outside distribution system, which offer was accepted by the company. The work of remodelling the company's distribution system is now under way under the supervision of the Commission's engineers and will be put into operation early in the coming year.

The Commission has also been authorized by the council to install an ornamental street lighting system on the main street consisting of approximately twenty-five 16 foot ornamental cast iron standards of the Shepherd's Crook type equipped with 600 c.p. lamps. Arrangements have been made to clear the main street of the lines of both the electric light plant and the telephone and telegraph company's.

Port Colborne

The Council of Port Colborne in June by resolution requested the Commission to make a valuation of the Ontario Power Co's. system in Port Colborne with the object in view of purchasing, if possible, the company's complete plant.

This work was completed and report submitted to the council, but owing to the expensive equipment in connection with large power consumers, the council decided that the cost of the system would be too great for them to undertake to purchase at the present time, and in September a by-law was carried allowing the municipality to make a contract with the Ontario Power Co., for a supply of power for a term of five years.

Port Dalhousie

During the year arrangements were made by the municipality to install meters on all customers, and by the first of the year 1916 the flat rate service will be discontinued entirely. This move was found necessary in order to put the system in good financial condition.

The installation of meters was advised by the Commission when the municipality first commenced taking power, but delay on the part of the council to raise sufficient debentures to cover the cost of the change has caused the delay in changing over from the flat rate system.

Port Robinson

The municipality of Port Robinson is supplied with power through the Welland sub-station, and the system in this municipality is operated by the Welland Commission as an extension to their system.

Owing to the construction of the new Welland Canal necessitating the removal of the low tension line supplying this village, investigations have been made in connection with the installation of a sub-station to take care of the present and proposed loads in this municipality.

Princeton

Hydro by-laws were submitted to the ratepayers of Princeton and carried. The amount of the money by-law which was submitted to cover the cost of the distribution system was \$3,500. At the municipality's request a distribution system was installed under the supervision of the Commission's engineers. Power was turned on in December and since that time a number of additional consumers have been connected to the system.

Ridgetown

On May 10th, the Hydro enabling by-law and the money by-law for \$12,500 were voted on and carried, a public meeting having been previously held, at which a representative of the Commission was present. The municipal distribution system is being reconstructed under the supervision of the Commission's engineers, and Hydro power will be available in the municipality early next year. The municipality signed a contract with the Commission for 200 h.p. at \$47.17 per h.p. per year.

An ornamental street lighting system consisting of approximately twenty 12 ft. ornamental cast iron standards equipped with 600 c.p. lamps is being installed on the main street, the extra cost of which is being paid for on the local improvement plan.

Sandwich

In January, a Hydro by-law was submitted and carried, and a contract signed by the municipality to take power from the Commission.

On the advice of this Commission the council requested by resolution that they be supplied with power by the Windsor Hydro-Electric system and that the Sandwich system be operated as part of the Windsor system.

On request of the council, a valuation of the Sandwich, Windsor and Amherstburg Co's. system in Sandwich was made and a report submitted, the Commission advising that \$3,500 be offered the company for their complete distribution, which offer the company declined to accept.

On authority from the council the Commission then constructed a complete distribution system in the municipality, together with a street lighting system. The street lighting system was put into operation in October and in April, 1916, the company have been notified to discontinue the distribution of power in the municipality and to remove their system from the streets.

Approximately one hundred 11 ft. ornamental cast iron street lighting standards have been erected in the business district and at some of the residential streets, the ornamental system being paid for on the local improvement plan.

Sandwich East Township

A number of extensions have been made into the township from the Windsor Hydro-Electric system. One of these extensions has been carried south a distance of approximately 3 miles to supply the Walker farms and another line has been built through Ford City and along the River Road to Tecumseh, a distance of approximately 7 miles, a considerable number of summer homes being supplied from the line between the two municipalities.

These lines in the township are handled by Walkerville as part of their system.

Sarnia

The Hydro question was taken up with the council by the engineers of the Commission in February, and on a request from the council by resolution a valuation of the Sarnia Electric Light Company's plant was made by the Commission's engineers. In September, after negotiations with the municipality and the local company, the municipality on the recommendation of the Commission offered the company \$175,000 for their complete distribution system and generating station. This offer was accepted by the company and arrangements have been made to submit the ratepayers the Hydro by-laws at the coming municipal elections.

According to estimates prepared by the Commission's engineers the municipality of Sarnia could be supplied with 1,500 h.p. at a rate of \$38.00 per h.p. per year.

Simcoe

A complete new distribution system, construction of which was commenced in the fall of 1914, was completed and put into operation in March, the work having been done under the supervision of the Commission, the total cost of the system being approximately \$32,000.

In the business district of the town, arrangements were made to keep the streets free from pole lines and 12 ft. ornamental cast iron standards were installed, fitted with 400 c.p. nitrogen-filled series lamps. A complete street lighting system has been installed in the municipality and the series system used throughout.

The operation of the system for the year has shown very excellent results in spite of the fact that good cheap gas is available in the municipality.

A Public Utilities Commission has been appointed, and the Hydro-Electric system and the waterworks plant will be operated under one management.

The Lake Erie & Northern Railway Co. will commence taking power during the year for the operation of their line to this district.

Stamford Township

At the request of Stamford Township council an inventory and valuation was made of the Ontario Distributing Company's system immediately adjoining Niagara Falls, and a full report in connection with this valuation is being forwarded to the township council for their consideration, as well as a schedule of rates to be charged to consumers by the township should they decide to purchase and operate the Ontario Distributing Company's system.

Stratford

Considerable extensions have been made in the Stratford system during the year. Outside of the additional requirements to serve new customers a general remodelling of the main feeders throughout the city has been commenced, according to plans suggested by the Commission's engineers. Most conspicuous is the new Whiteway lighting, which consists of gas-filled lamps, hung from "Shepherd's Crook" fixtures, mounted on trolley poles. The circuits are so arranged that the lights on one side of the street may be cut off after midnight. On the streets where the ornamental lighting is used, the wooden poles have been removed and service is supplied from the rear of the buildings.

The entire work was placed in the hands of the Commission and was completed in record time, and well within the estimate. The city has now one of the most modern and efficient lighting systems in the Province, and much satisfaction was expressed by the local authorities.

The Waterworks Department have also been active, and with the advice of the Commission, a new domestic pump has been installed. This pump replaced one of the original motor driven units, which had insufficient capacity for the increased demand. Upon the completion of this installation, the Water Commission wishing to give better service, applied to the Railway and Municipal Board for an appropriation of \$50,000 for the purchase of a 500,000 imp. gal. water tower and two gasoline engine driven pumps, to be used as an auxiliary to the electrically driven pumps, in place of steam.

Engineering advice was obtained from the Commission, their engineers drawing up plans and specifications, and calling for tenders on, and testing the equipment.

The work is progressing favorably, the pumps are being installed and foundations for the tank under way. The system will be completed during the coming year.

St. Catharines

There has been a remarkable increase in the power load on the St. Catharines system during the year, due partly to the large number of manufacturing companies being engaged in manufacturing war munitions, the power load having almost doubled during the year. The number of customers connected on the system has also been very largely increased.

Assistance has been given to the municipality during the year in connection with arrangements for ornamental lighting on a number of business streets, and it is expected that the proposed ornamental lighting system will be installed next year.

St. George

The municipality were advised that power could be supplied at the following figures:

H.P.	Volts	Cost per H.P. per Year.
100	4,000	\$46.56
150	4,000	39.18

Detail information was obtained in connection with the requirements for a distribution system, and an estimate of the cost of same was prepared and forwarded to the municipality for their consideration with a recommendation that they should submit a Hydro-Electric money by-law to the ratepayers for an amount of \$5,850.

On May 3rd, the Hydro-Electric by-laws were submitted to the ratepayers and carried by large majorities. Since that date a distribution system has been installed under the supervision of the Commission's engineers, and this system was completed and power turned on the same Aug. 17th.

Rates were forwarded to the municipality for power, domestic, commercial, and street lighting, and the system is now operating quite satisfactorily.

St. Jacobs

Estimates were submitted and plans forwarded early in the year in connection with power for this municipality. No action has yet been taken by the trustees, but it is expected that further investigations will soon be made by the village trustees for a supply of power.

St. Marys

New street lights have been erected throughout the business section, and it is intended to entirely revise the method of lighting in the residential part. This discontinuance of the use of 60-cycle apparatus, and the erection of new power and lighting feeders, will eliminate much of the loss. Orders have been placed through the Commission for new street light fixtures and station equipment.

The local Commission are also considering the purchase of a gasoline engine driven centrifugal pump to replace the steam, as an auxiliary to their electrically operated pump.

St. Thomas

This municipality had a load of 1,923 h.p. for the month of September, showing an increase of approximately 16 per cent. in the last year.

The load factor is high and the operating reports show very satisfactory results for the year.

A large number of new lighting customers have been added and a few power customers. About 30 customers are using electric stoves for their cooking and the results to the customers have been very satisfactory. It is expected a large number will take advantage of the low lighting rates to use electricity for cooking in the coming year.

As this system required extra station equipment it was decided by the local Hydro Commission to consult us on their requirements for a station site, station building and extra station equipment.

This was looked into and information forwarded to them and the local Hydro Commission will erect a new sub-station on the south-west corner of Catharine and Gas Streets in the coming year; plans and specifications are now being prepared by us to cover this work.

It is expected the Waterworks Department will take advantage this coming year of the low power rates and use electric power for pumping.

During the year a new street lighting system was installed on Talbot Street. The old wooden trolley poles were replaced with suitable steel trolley poles and ornamental brackets installed thereon. An overhead No. 6 weatherproof D.B. wire carries the 6.6 amp. current to the 500 watt gas-filled series lamps.

Financial statements still show a large surplus in the face of a large reduction in rates made at the beginning of the year.

Toronto

At the request of the Commissioners of the Toronto Hydro-Electric system, a full report was made and submitted in connection with the removal of lines of the T. H. E. system from Lansdowne Avenue, the removal of these poles being made necessary by the extension of the Civic car lines on this street.

This report shows details of the cost of making the proposed change and fixing the responsibility for same.

Tilbury

The distribution system which was purchased by the municipality from a private owner and was remodelled under the direction of the Commission's engineers was put into operation in March, the rates being greatly reduced from those in use previously. The operation for the year shows the system to be in good financial condition.

Negotiations are at the present time under way for supplying from the Tilbury station power for operating drainage propositions in the district.

Welland

The power load on the Welland municipal station has been doubled during the year, and the number of lighting customers shows a substantial increase. The Commission has given considerable assistance to the Welland Hydro-Electric system in connection with prospective power customers and plans are being prepared for additional sub-station capacity.

An additional customer outside the municipality of Welland commenced taking approximately 2,000 h.p. from the Commission during the early part of the year.

The present conditions indicate that in the near future a very large amount of power will be sold in the Welland district.

Wallaceburg

The distribution system which was purchased from the Premier Electric Light Company, of Wallaceburg, was remodelled under the supervision of the Commission and put into operation in February. The rates recommended for use were greatly reduced from those previously in force.

The Hydro-Electric system and the new waterworks system have been placed under the one management, the office building having been erected for the municipality by the Commission and is an extension of the new sub-station building.

The electrically driven pumps in the new pumping station will be put into operation early next year, and prospects indicate a considerable power load in this municipality in the near future.

Walkerville

The Walkerville system has shown a good steady growth as to number of customers connected, and the amount of power taken from the Commission has steadily increased until at the present time the municipality's peak is approximately 800 horse-power.

A number of extensions to the municipality's street lighting system were made during the year. Several rural extensions were also made and a line built from Walkerville to the municipality of Tecumseh, a large number of customers being connected to this line along the Detroit River Road in Sandwich East Township.

The extensions in Sandwich East Township are operated by Walkerville as part of their system.

A complete street lighting system has been installed in Ford City, the system of which municipality is being operated also by Walkerville as part of their system.

Wellesley

Requests from the Police Village of Wellesley, regarding a supply of power, have been received, and estimates prepared and submitted.

Information has been given by the Commission's engineers and others, and by-laws will be submitted at the January elections.

It is proposed to serve Wellesley from the Baden station, the price based on 100 h.p. at 4,000 volts being \$39.96 per h.p. year. A money by-law for \$7500 for the distribution system is also being voted upon.

Williamsburg

A contract for 20 horse-power was signed and a distribution system in Williamsburg was constructed by the Commission for the village. A 2,300 volt line was run from Morrisburg and power supplied therefrom temporarily.

Windsor

The financial report of the Windsor Hydro-Electric system for the year shows a growth of business beyond expectations, and the system is now in good financial condition. At the present time they have approximately 3,000 customers connected to the system, and have a peak load on the municipal station of approximately 1,200 h.p.

The ornamental street lighting system has been completed during the year and there are at present installed in the municipality two hundred and seventy-five 14 ft. ornamental cast iron standards equipped with 500 watt lamps and seventeen hundred 10 ft. 6 in. ornamental cast iron standards equipped with 100 c.p. lamps. A series system of lighting is used and nitrogen-filled lamps are used throughout.

The Windsor Hydro-Electric system is operating a system which has been recently built under the Commission's supervision for the municipality of Sandwich, the customers in Sandwich being handled as part of the Windsor system. The number of power customers is increasing steadily and Windsor should soon have a large power load.

Wyoming

At the request of the village council the engineers of the Commission prepared an estimate of the cost of constructing a new distribution system in the municipality, a report in connection with which has been submitted, and preparations have been made to submit the Hydro by-laws to the people at the coming municipal elections.

According to estimate prepared by the Commission's engineers, Wyoming can be supplied with 100 h.p. at the rate of \$38.34 per h.p. per year.

MUNICIPAL ACCOUNTS

The actual results from municipal distribution of Hydro power are shown in the tables submitted in this section. In accordance with the requirements of the Ontario Government the municipal year, with the exception of London, ends on December 31st. The tables which follow under "Municipal Accounts" cover the calendar year ending December 31st, while all other sections of the annual report deal with the fiscal year ending October 31st.

The work of standardizing the electrical accounts of the Hydro-Electric municipalities commenced in 1912 has been continued. During the year accounting systems were established at Bothwell, Burford, Bolton, Brechin, Chatham, Comber, Dresden, Dutton, Delaware, Dorchester, Embro, Lucan, Lynden, Lambeth, Mt. Brydges, Princeton, Pt. McNicoll, Simcoe, Strathroy, St. George, Tilbury, Thamesville, Victoria Harbor, Wallaceburg, Waterford, Waubaushe and Williamsburg, and the local officers instructed in the proper handling of the books.

A periodical inspection has been made of the electrical accounts of all Hydro-Electric municipalities, our accountants assisting the local officers by suggesting better or simpler methods of office routine, and in the case of smaller towns and villages, where the utility is in charge of men of little or no bookkeeping experience, actually doing most of the accounting.

The system of monthly balance sheets and operating reports inaugurated has enabled the Provincial Commission to keep in close touch with the local conditions, and from the local reports and other data which is collected or worked up by the auditors of municipal accounts, the capital costs and operating expenses are periodically divided into the principal revenue accounts, domestic light, commercial light, power and street light, these in turn being set against the respective revenues for the purpose of rate adjustment.

From this data the Hydro-Electric Power Commission is in a position to authorize and enforce a schedule of selling rates in each municipality which makes each of the above-named revenue departments self-supporting, so that an excessively high rate in one does not take care of a deficit in another, to the manifest advantage of the latter.

The eight statistical reports which follow were prepared to give a comprehensive view of the present status of the electric utilities and the result of operation in the ninety-nine municipalities in which the service has been installed long enough to justify a report.

The municipalities have been listed in the order of their size according to Municipal Bulletin No. 9, Bureau of Industries of the Ontario Department of Agriculture; the populations are shown and the statistics are prepared to permit an intelligent comparison of operating results in municipalities where conditions are similar. This is resulting in a friendly rivalry between the municipalities for an increased load, an efficient and economical administration, and an intelligent effort to improve the load factor, which is so essential to low selling rates.

Statement "A" is a comparative condensed balance sheet of each municipality as at December 31st, 1914, and December 31st, 1915, showing the plant cost in natural subdivisions, and other items making up the total assets. The true or quick liabilities, such as debenture balance, bank overdraft and accounts payable, are totalled separately before including such reserve accounts as debentures paid, sinking fund reserve, depreciation reserve and surplus. In this way the relative increase

in plant value and net debt during the year in any municipality can be quickly determined.

The percentage of net debt to plant cost at the end of each year has been worked out, and shows a marked decrease. Special attention is called to this very interesting and gratifying feature.

All of the accounts appearing in the balance sheet under "Reserves," such as "Debentures Paid," "Sinking Fund Reserve," "Depreciation Reserve," and "Surplus," might properly be called surplus and represent the gross profit from operation.

Up to this year the annual additions and extensions to plants financed from surplus revenue have always exceeded the depreciation charge, thus obviating any need for an actual cash depreciation fund. However, as the plant extensions in the older Hydro municipalities are becoming quite nominal, the difference between the cost of such extensions and the depreciation charge will be set aside in cash and maintained as a separate account.

Statement "B" is a condensed operating report for the year ending December 31st, 1915, showing the result in each municipality. The population and the number of consumers in each class is also given to facilitate comparisons. In some cases where the power was turned on subsequent to January 1st, the proportion of the annual fixed charges corresponding to the period of operation has been used, and in other municipalities where the operation covers a very short period, and no actual payment has been made, the fixed charges have been omitted entirely to simplify the accounting in future years and avoid the necessity for annual adjustments.

In some municipalities where it requires from six weeks to two months to close the books for the year, the figures are taken from the trial balances, which are substantially correct, but subject to revision on final audit.

Ordinarily a municipality is not considered self-sustaining unless the revenues are sufficient to meet all operation and maintenance charges, all the interest, sinking fund or principal payments on debentures, and additions to plant to the extent of five per cent. of the tangible capital in lieu of depreciation. This percentage is based on the usual type of construction; special features, such as concrete poles or underground work, or an unusually large amount of overhead work would require a lower or higher rate.

A study of Statement "B" will show that in twelve of the ninety-nine municipalities included in the report, the revenue was insufficient to take care of the operation expenses and debenture charges. The losses are being carried forward as charges against future operation. In the majority of cases, the unfavorable showing is due to accumulated losses during the early months of operation before a balanced and profitable load was secured. The net credit balance of surplus in the ninety-nine municipalities during the year reached the magnificent sum of \$702,540.66, and the systems are now serving 120,828 consumers.

Statement "C" shows in detail the revenues and expenses which are summarized in Statement "B," comparative with the operation in other municipalities of the same size for 1913, 1914 and 1915. In comparing the cost of power purchased, the varying price per horsepower paid must be taken into consideration.

Statement "D," showing the revenue for the years 1912, 1913, 1914 and 1915, and the number of customers in each class of service at the end of the year, is intended to illustrate the rapid expansion of the service in the municipalities where the operation covers a period of two years or longer.

It is interesting to note the healthy financial condition of the utilities and the

steady growth of revenue, in the face of a constantly decreasing scale of rates, as shown by Statements "C" and "D."

Statement "E" is prepared to show the approximate installation and annual cost per lamp and per capita of the street lighting service in cities, towns and incorporated villages where Hydro service has been installed. The figures are for the calendar year ending December 31st, 1915.

Statement "F" will show the actual net cost per kw. hr. in domestic and commercial service, including all floor space and installed capacity loadings, and, where it has been possible to compute it, approximately what this service would have cost at the rates in effect prior to the introduction of Hydro, and the hypothetical saving to light users only. The net kw. hr. cost in 1914 is also shown.

Statements "G" and "H" show comparatively the cost of power to the municipalities, the selling rates for power and light in 1912, 1913, 1914 and 1915, and the recommended rates for 1916.

In order that the effect of the Hydro co-operative scheme on the Hydro municipalities as a whole may be clearly shown, the municipal balance sheets for the past three years have been consolidated, and the operating reports have been treated in the same manner for four years.

CONSOLIDATED OPERATING REPORTS.

Year Ending Dec. 31st.	1912	1913	1914	1915
Number of Municipalities included in report	28	45	69	99
Operating and maintenance expense	\$1,086,135 00	\$1,516,613 32	\$2,012,754 07	\$2,552,832 50
Debenture charges and interest	291,033 00	525,054 44	661,949 23	814,443 67
Total Annual Expense	\$1,377,168 00	\$2,041,667 76	\$2,674,703 30	\$3,367,276 17
Total Revenue	1,617,674 00	2,617,439 51	3,433,936 16	4,069,816 83
Surplus for year	\$240,506 00	\$575,771 75	\$739,232 86	\$702,540 66
Depreciation charge	124,992 47	262,675 21	357,883 31	(a) 240,644 04
Surplus less Depreciation charge	\$159,219 06	\$313,096 54	\$401,349 55	(a) \$461,896 62
Accumulated surplus invested in plant extension	\$284,211 53	\$859,983 28	\$1,601,167 42	\$2,647,070 52
Estimated saving to light users only during year ....	.....	1,576,500 00	1,694,300 00	.....
Number of consumers, light..	33,568	63,157	93,179	117,010
“ “ power.	1,399	2,532	3,565	3,818
Total number of consumers	34,967	65,689	96,744	120,828
			Dom. Lt.	Com'l Lt.
Highest cost per kw-hr. in 1915			11.5	12.2
Lowest cost per kw-hr. in 1915			2.4	1.9
Average cost per kw-hr in 1915			3.9	3.1
Average cost per kw-hr. prior to Hydro			9.3	10.4

Note.—(a) The Depreciation Reserve in Port Arthur and Toronto is included in "Surplus" in the 1915 report.

The operating reports show that while the municipalities have invested \$17,683,264.07 in distributing systems and executive equipment, and have assumed liability for an annual fixed charge of \$814,443.67, the surplus was almost sufficient

to take care of the debenture charges for another year. Bearing in mind that these fixed charges include the sinking fund and debenture retiring payments, as well as interest, so that the present consumers are not only paying the ordinary operation, maintenance and interest charges, but are retiring about 3.3% of the capital debt each year, thus automatically providing for depreciation regardless of any special provision which may be made in the accounts, the phenomenal success of the enterprise from the municipal standpoint is apparent.

These statements show not only the status of the utility in each municipality, but of all the municipalities in the Niagara, Severn, Wasdell's Falls, St. Lawrence, Ottawa and Port Arthur systems consolidated into one unit.

The result is of particular interest and value, as it is the final answer of the municipalities to their experiment in the co-operative transmission and municipal distribution of Hydro power.

CONSOLIDATED BALANCE SHEETS.

Year Ending Dec. 31st.	1913	1914	1915
Number of Municipalities included....	45	69	99
Assets:			
Lands and Buildings	\$626,707 34	\$791,732 20	\$873,838 18
Sub-Station Equipment	1,090,875 69	1,476,087 84	1,582,062 56
Distribution System, Overhead ...	2,690,834 74	3,422,763 93	4,234,626 05
" " Underground	644,514 24	807,153 53	928,420 77
Line Transformers	615,546 20	787,613 52	981,754 70
Meters	840,606 64	1,172,475 11	1,418,165 08
Street Lighting Equipment, Reg..	900,614 80	1,071,255 37	1,309,628 49
" " Ornamental	62,765 34	270,386 55	197,644 82
Miscel. Equipment and Const. Exp.	866,551 89	2,062,035 90	1,701,182 66
Steam or Hydraulic Plant	1,401,175 28	420,108 33	461,651 60
Old Plant	341,277 00	478,881 56	415,518 23
Other Miscellaneous Assets .....	.....	140,631 56	768,854 63
Total Plant	\$10,081,469 16	\$12,901,125 40	\$14,873,347 77
Bank and Cash Balance	\$450,887 97	\$422,350 12	\$284,653 96
Inventories	344,487 95	561,873 08	602,920 69
Accounts Receivable	540,274 58	615,226 76	726,556 76
Sinking Fund	431,747 27	625,217 03	868,983 78
Other Assets	58,959 93	123,410 97	326,801 11
Total Liquid Assets	\$1,826,357 70	\$2,348,077 96	\$2,809,916 30
Total Assets	\$11,907,826 86	\$15,249,203 36	\$17,683,264 07
Liabilities:			
Debenture Balance	\$8,711,308 37	\$10,678,078 36	\$11,831,811 03
Accounts Payable	1,553,711 45	1,682,150 29	2,040,038 01
Bank Overdraft	160,919 16	228,622 50	292,106 44
Other Liabilities	42,412 81	113,838 66	37,388 31
Total Liabilities	\$10,468,351 79	\$12,702,689 81	\$14,201,343 79
Reserves:			
Debentures Paid	\$202,751 26	\$320,129 10	\$394,466 22
Sinking Fund Reserve	431,747 27	625,217 03	868,983 78
Depreciation Reserve	478,145 88	850,618 07	817,182 70
Surplus	326,830 66	750,549 35	1,401,287 58
Total Reserves	\$1,439,475 07	\$2,546,513 55	\$3,481,920 28
Total Liabilities and Reserves	\$11,907,826 86	\$15,249,203 36	\$17,683,264 07
Percentage of Net Debt to Total Assets	88.0%	83.0%	80.3%

An apparent discrepancy in the amount of the Depreciation Reserve in 1915 is due to this account in Toronto and Port Arthur being included in "Surplus," but as a matter of fact all these "Reserves" are simply "Surplus" under another name.

The steady decrease in the percentage which the net debt balance bears to the total assets from 92.5% in 1912; 88.0% in 1913; 83.0% in 1914 to 80.3% in 1915 dispels all doubt as to the future of the enterprise.

STATE

Comparative Condensed Balance Sheets of Electric Departments

Municipality	Toronto		Ottawa	
Population	470,144		101,785	
—	1914	1915	1914	1915
ASSETS	\$	c.	\$	c.
Lands and Buildings	363,945	40	373,733	08
Sub-Station Equipment	740,980	33	729,143	69
Distribution System, Overhead.....	1,184,748	21	1,554,253	98
“ “ Underground..	603,500	90	685,557	44
Line Transformers.....	328,203	35	394,525	78
Meters.....	490,590	08	564,238	32
Street Light Equipment, Regular..	677,878	41	795,750	64
“ “ Ornamental.....			29,957	84
Miscel. Equip. and Construction Exp.	737,276	56	1,231,753	03
Steam or Hydraulic Plant.....	951,765	56	50,106	14
Old Plant.....	104,486	15	505,646	83
			5,097	37
Total Plant.....	6,183,374	95	6,884,708	93
Bank and Cash Balance.....	263,840	21	84,220	22
Inventories.....	409,177	65	440,845	89
Accounts Receivable.....	379,768	60	344,828	27
Sinking Fund.....	369,219	16	480,949	94
Other Assets.....	76,364	37	73,657	99
Total Assets.....	7,681,744	94	8,309,211	24
LIABILITIES AND RESERVES				
Liabilities				
Debenture Balance.....	5,650,000	00	6,300,000	00
Accounts Payable.....	1,162,358	98	848,851	48
Bank Overdraft.....			3,324	20
Other Liabilities.....	85,143	50		
Total Liabilities.....	6,897,502	48	7,148,851	48
Reserves				
Debentures Paid.....				
Sinking Fund Reserve.....	369,219	16	480,949	94
Depreciation Reserve.....	252,248	48	189,378	30
Surplus.....	162,774	82	679,409	82
			47,014	43
Total Liabilities and Reserves....	7,681,744	94	8,309,211	24
Percentage of Net Debt to Total Assets	90.0		86.0	
			67.2	
			66.1	

MENT "A"

of Hydro Municipalities as at December 31st, 1914 and 1915

Hamilton 101,344		London 56,358		Brantford 26,389		Windsor 22,993	
1914	1915	1914	1915	1914	1915	1914	1915
\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.
58,738 46	59,020 10	66,912 37	68,220 17	6,546 22	11,069 21	8,397 66	11,605 94
80,956 00	89,694 10	124,036 63	144,439 34	12,048 42	38,710 52	9,922 45	30,862 05
268,751 26	287,116 34	253,981 24	279,633 40	98,680 18	100,808 23	39,081 31	112,368 72
126,692 41	156,569 93	352 43	352 43	.....	.....	.....	.....
65,791 02	88,927 58	29,823 63	35,324 59	14,396 85	18,750 49	8,964 30	14,516 02
104,274 72	125,792 86	98,581 61	110,487 46	15,209 76	18,837 13	4,842 11	17,839 38
89,943 14	92,520 48	35,664 34	38,441 58	15,167 68	15,909 64	7,458 57	119,163 76
67,489 03	.....	.....	.....	36,410 50	33,053 38	67,661 39	33,621 09
116,390 57	118,426 02	44,878 01	47,031 27	17,569 90	21,357 12	31,352 18	42,499 88
2,000 00	2,000 00	.....	.....	.....	.....	.....	h 6,548 02
981,026 61	1,020,067 41	654,230 26	723,930 24	216,029 51	257,995 72	177,679 97	389,024 86
.....	.....	8,285 53	24,567 86	55 78	1,413 88	17,187 01	3,858 52
33,685 18	34,450 25	28,124 06	36,561 72	709 27	552 51	3,739 81	8,019 99
51,137 23	95,138 39	40,611 55	47,573 16	1,756 78	1,252 91	2,047 85	720 96
28,369 94	50,189 06	20,932 37	30,900 36	3,862 00	10,229 50	.....	2,791 18
1,318 58	3,217 39	.....	210,000 00	.....	.....	507 13	.....
1,095,537 54	1,203,062 50	752,183 77	1,073,533 34	222,413 34	271,444 52	201,161 77	404,415 51
840,000 00	840,000 00	456,026 44	661,010 13	152,500 00	222,500 00	201,161 77	343,477 40
77,066 26	63,298 69	127,639 90	168,450 68	.....	.....	.....	50,664 05
73,508 89	110,745 32	.....	.....	57,877 24	16,452 58	.....	.....
18,093 94	23,607 37	864 00	1,571 00	.....	.....	.....	375 00
1,008,669 09	1,037,651 38	584,530 34	831,031 81	210,377 24	238,952 58	201,161 77	394,516 45
.....	.....	25,873 56	30,889 87	.....	.....	.....	1,783 01
28,359 94	50,189 06	20,932 37	30,900 36	3,862 00	10,229 50	.....	2,791 18
30,085 01	55,893 88	66,568 52	98,604 15	6,000 00	15,408 22	.....	.....
28,413 50	59,328 18	54,278 98	82,107 15	2,174 10	6,854 22	.....	5,324 87
1,095,537 54	1,203,062 50	752,183 77	1,073,533 34	222,413 34	271,444 52	201,161 77	404,415 51
91.8	86.3	77.7	77.3	93.8	88.1	100.0	97.5

Municipality	Peterboro		Berlin	
Population	20,653		19,056	
—	1914	1915	1914	1915
ASSETS	\$ c.	\$ c.	\$ c.	\$ c.
Lands and Buildings		15,198 33	29,512 86	31,068 71
Sub-Station Equipment			63,952 83	72,450 20
Distribution System, Overhead.....	364 44	1,354 73	78,373 58	84,877 71
“ “ Underground.....			6,353 68	6,785 40
Line Transformers.....	847 26	3,051 94	26,593 35	29,079 41
Meters.....	1,924 37	12,365 76	33,361 91	38,768 09
Street Light Equipment, Regular... “ “ Ornamental.....	5 04 27,015 99	32 72	19,532 87	20,242 17
Miscel. Equip. and Construction Exp. Steam or Hydraulic Plant.....	5,049 16	5,266 12	6,229 29	6,016 95
Old Plant.....	100,000 00	136,050 95	56,873 81	56,879 74
Total Plant.....	135,206 76	173,320 55	320,784 18	346,168 38
Bank and Cash Balance.....	2,879 81	.....	15,474 46	11,617 59
Inventories.....	.....	.....	4,632 36	6,371 06
Accounts Receivable.....	6,817 23	5,810 98	11,219 74	17,613 09
Sinking Fund.....	2,139 61	4,364 80	.....	.....
Other Assets.....	3 49	.....	6,867 25	.....
Total Assets.....	146,046 90	183,496 33	358,977 99	381,770 12
LIABILITIES AND RESERVES				
Liabilities				
Debenture Balance.....	120,000 00	120,000 00	250,817 14	243,675 27
Accounts Payable.....	11,905 40	27,302 24	9,332 53	10,125 09
Bank Overdraft.....	7,015 44	10,665 48	.....	.....
Other Liabilities.....	4 98	5,500 00	.....	.....
Total Liabilities.....	138,926 37	163,467 72	260,149 67	253,800 36
Reserves				
Debentures Paid.....	.....	.....	49,332 86	56,474 73
Sinking Fund Reserve.....	2,139 61	4,364 80	.....	.....
Depreciation Reserve.....	.....	7,500 00	23,864 84	34,803 24
Surplus.....	4,980 92	8,163 81	25,630 62	36,691 79
Total Liabilities and Reserves....	146,046 90	183,496 33	358,977 99	381,770 12
Percentage of Net Debt to Total Assets	95.1	90.0	72.5	66.5

“ A ”—Continued

of Hydro Municipalities as at December 31st, 1914 and 1915

Port Arthur a 18,324		St. Catharines 17,296		Stratford 17,006		Guelph 16,799	
1914	1915	1914	1915	1914	1915	1914	1915
\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.
.....	.....	1,147 42	1,492 42	16,950 60	23,597 29	19,298 41	19,400 41
19,857 44	1,056 49	3,531 72	5,276 84	21,213 33	21,409 13	40,360 20	40,571 05
194,657 61	201,080 80	49,752 84	68,349 25	81,559 81	85,523 21	50,822 17	56,657 84
.....	.....	1,383 80	.....	.....	.....	.....	.....
10,177 83	10,848 93	8,364 86	9,245 24	14,441 43	14,726 43	8 255 04	9,966 00
41,521 38	42,714 41	8,546 05	11,031 05	19,347 05	23,722 21	19,478 59	22,836 82
27,000 00	27,000 00	2,584 82	6,501 94	5,971 43	5,971 43	22,852 99	25,553 60
.....	.....	.....	.....	1,976 04	22,175 22	.....	.....
8,367 20	8,803 41	8,689 91	19,896 25	7,848 12	7,848 12	6,655 21	6,777 76
357,210 24	378,798 55	.....	.....	.....	.....	a36,145 41	a36,301 89
.....	.....	30,008 75	75,554 13	11,187 00	11,187 00	.....	.....
658,791 70	670,302 59	112,626 37	198,730 92	180,494 81	216,160 04	208,868 02	218,065 37
.....	13,363 06	25 00	25 00	7,502 30	408 17	14,308 61	17,752 16
172 73	240 22	4,436 30	986 60	886 78	2,759 65	11,952 32	12,374 40
19,325 03	26,178 99	1,349 57	2,821 50	2,982 86	13,178 01	9,764 63	7,646 42
23,390 23	68,476 51	2,068 29	4,219 31	10,091 12	13,553 36	12,993 99	15,741 28
.....	164 62	.....	.....	2,083 82	3,243 74	.....	.....
701,827 69	778,726 01	120,505 53	206,783 34	204,041 69	249,302 97	252,887 57	271,579 63
.....
533,068 30	568,758 70	.....	116,000 00	144,090 00	161,710 00	127,417 09	125,355 51
9,773 73	.....	116,521 26	74,239 94	2,775 18	20,255 48	4,465 55	5,868 23
3,314 93	.....	.....	1,288 82	.....	7,319 21	.....	.....
6,956 46	10,031 67	.....	.....	.....	.....	.....	.....
553,113 42	578,790 37	116,521 26	191,528 76	146,865 18	189,284 69	131,882 64	131,223 74
.....
48,431 70	58,823 83	.....	.....	19,710 00	24,090 00	17,582 90	19,644 48
23,390 23	68,476 51	2,068 29	4,219 31	10,091 12	13,553 36	12,993 99	15,741 28
16,469 79	.....	850 00	8,100 00	17,124 92	22,374 92	48,046 12	58,546 12
60,422 55	72,635 30	1,065 98	2,935 27	10,250 47	.....	42,381 92	46,424 01
701,827 69	778,726 01	120,505 53	206,783 34	204,041 69	249,302 97	252,887 57	271,579 64
.....
78.8	.....	96.7	92.6	72.0	75.9	52.1	48.3

STATEMENT

Comparative Condensed Balance Sheets of Electric Departments

Municipality Population	St. Thomas 16,794		Chatham 12,714	Galt 12,060	
—	1914	1915	1915	1914	1915
ASSETS	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.
Lands and Buildings	9,709 11	12,351 59	18,320 18	11,722 68	12,201 05
Sub-Station Equipment	33,857 96	35,337 54	6,055 12	20,513 66	22,082 47
Distribution System, Overhead....	62,189 41	67,507 25	45,955 34	91,467 50	105,277 47
" Underground	12,116 30	13,373 59	9,810 16	16,296 09	17,795 56
Meters.....	21,617 04	24,058 50	9,522 19	24,437 73	28,938 43
Street Light Equipment, Regular.	11,797 57	12,030 48	6,282 21	7,982 73	8,484 27
" Ornamental	5,622 48	6,749 83	20,208 57	39,875 76	50,697 06
Miscel. Equip. and Construct'n Exp.	5,622 48	6,423 66	13,627 39	8,528 63	11,192 06
Steam or Hydraulic Plant.....	5,213 84	4,289 96	.....	.....	.....
Old Plant.....	.....	.....	.....	.....	.....
Total Plant.....	162,073 71	182,122 40	129,781 16	220,824 78	256,668 37
Bank and Cash Balance.....	9,466 39	22,597 51	691 84	.....	.....
Inventories.....	794 80	1,879 27	7,307 45	3,456 49	1,591 89
Accounts Receivable.....	8,991 16	10,960 39	1,308 20	.....	.....
Sinking Fund.....	.....	.....	.....	14,902 70	20,459 43
Other Assets.....	17,420 42	86 25	721 47	.....	.....
Total Assets.....	198,736 48	217,645 82	139,810 12	239,183 97	278,719 69
LIABILITIES AND RESERVES					
Liabilities					
Debenture Balance.....	90,833 51	109,146 67	88,861 60	136,000 00	165,999 55
Accounts Payable.....	8,117 82	8,888 40	26,147 08	.....	.....
Bank Overdraft.....	.....	.....	22,853 04	48,762 31	39,483 55
Other Liabilities.....	.....	.....	810 00	.....	.....
Total Liabilities.....	98,951 33	118,035 07	138,671 72	184,762 31	205,483 10
Reserves					
Debentures Paid.....	20,166 49	23,937 76	1,138 40	.....	.....
Sinking Fund Reserve.....	.....	.....	.....	14,902 70	20,459 43
Depreciation Reserve.....	47,927 04	56,662 04	.....	25,500 00	35,500 00
Surplus.....	31,691 62	19,010 95	.....	14,018 96	17,277 16
Total Liabilities and Reserves.	198,736 48	217,645 82	139,810 12	239,183 97	278,719 69
Percent'ge of Net Debt to Total Assets	49.8	54.2		77.2	70.4

“A ”—Continued

of Hydro Municipalities as at December 1914 and 1915

Woodstock 10,265		Welland 7,243		Barrie 7,088		Midland 6,375	
1914	1915	1914	1915	1914	1915	1914	1915
\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.
7,331 95	7,331 95	6,172 68	6,503 78	12,034 61	12,034 61	4,780 69	4,780,69
27,685 13	27,685 13	8,981 25	15,846 88	20,536 29	20,540 44	8,407 78	8,407 78
34,334 28	36,335 71	40,830 86	43,624 07	18,420 33	19,824 30	30,697 06	31,627 90
.....
18,253 32	20,173 06	11,191 63	11,743 46	3,238 49	3,617 24	7,573 63	8,640 06
15,392 17	16,994 24	8,246 18	8,549 11	14,119 96	15,208 25	10,495 06	11,236 62
10,233 97	10,328 77	1,974 99	2,269 59	3,179 97	3,789 52	3,421 85	3,421 85
.....
.....	.....	6,492 54	7,348 74	757 49	757 49	3,500 58	3,500 58
15,743 62	15,743 62	.....	.....	31,062 48	31,062 48	.....	.....
15,835 26	15,835 26	.....	.....	.....	.....	7,057 84	7,057 84
.....
144,809 70	150,427 74	83,890 13	95,885 63	103,349 62	106,834 33	75,934 49	78,673 32
.....
7,391 38	13,953 07	535 18	1,803 40	3,721 03	2,923 18	7,439 46	10,455 21
705 35	113 12	720 12	.....	3,441 72	5,257 50	147 23	311 87
.....	.....	2,535 18	16,936 34	5,426 07	5,072 17	2,500 93	4,373 10
32,536 50	36,347 74	1,961 30	3,566 00	.....	.....	.....	.....
.....	1,500 00	.....	.....	.....	.....	.....	.....
.....
185,442 93	202,341 17	89,641 91	118,191 37	115,938 44	120,087 18	86,022 11	93,813 50
.....
.....
107,385 63	107,385 63	65,000 00	90,000 00	52,170 97	48,437 13	40,788 82	38,562 52
.....	.....	22,232 78	16,322 18	1,260 94	1,434 21	600 00	800 00
.....
.....	.....	.....	.....	4 22	.....	.....	.....
.....
107,385 63	107,385 63	87,232 78	106,322 18	53,436 13	49,871 34	41,388 82	39,362 52
.....
.....	.....	.....	.....	34,829 03	38,562 87	12,961 18	15,187 48
32,536 50	36,347 24	1,961 30	3,566 00	.....	.....	.....	.....
15,892 40	22,483 98	.....	4,425 00	6,850 00	10,350 00	9,000 00	12,400 00
29,628 40	36,124 32	447 83	3,878 19	20,823 28	21,302 97	22,672 11	26,863 50
.....
185,442 93	202,341 17	89,641 91	118,191 37	115,938 44	120,087 18	86,022 11	93,813 50
.....
.....
57.9	53.1	97.3	90.0	46.1	41.5	48.1	42.0

STATEMENT

Comparative Condensed Balance Sheets of Electric Departments

Municipality Population —	Collingwood 6,361		Ingersoll 5,200	
	1914	1915	1914	1915
ASSETS	\$ c.	\$ c.	\$ c.	\$ c.
Lands and Buildings	4,343 60	4,343 60	3,057 57	3,057 57
Sub-Station Equipment	4,352 80	4,352 80	10,232 56	10,232 56
Distribution System, Overhead.....	23,881 01	25,104 34	30,046 34	31,051 22
" Underground.....				
Line Transformers.....	4,814 05	5,219 75	7,734 50	7,898 75
Meters.....	8,292 84	9,648 56	9,952 66	10,542 34
Street Light Equipment, Regular...	2,404 29	2,446 35	2,336 01	2,336 01
" Ornamental.....				
Miscel. Equip. and Construction Exp.	5,043 39	5,069 51	8,253 30	8,253 30
Steam or Hydraulic Plant.....				
Old Plant.....	5,127 75	4,415 17	22,368 53	22,334 21
Total Plant.....	58,259 73	60,600 08	93,981 47	95,705 96
Bank and Cash Balance.....	882 84	2,643 45		
Inventories.....	429 65	175 13	1,305 44	404 29
Accounts Receivable.....	6,906 21	7,412 52	5,881 07	7,757 02
Sinking Fund.....			6,498 21	8,388 82
Other Assets.....				
Total Assets.....	66,478 43	70,831 18	107,666 19	112,256 09
LIABILITIES AND RESERVES				
Liabilities				
Debenture Balance.....	35,362 35	33,295 21	79,800 00	79,800 00
Accounts Payable.....	4,165 85	2,689 50	985 50	1,824 74
Bank Overdraft.....			5,452 88	2,130 08
Other Liabilities.....				
Total Liabilities.....	39,528 20	35,984 71	86,238 38	83,754 82
Reserves				
Debentures Paid.....	4,047 94	6,115 08		
Sinking Fund Reserve.....			6,498 21	8,388 82
Depreciation Reserve.....	4,790 00	7,390 00	6,030 00	9,230 00
Surplus.....	18,112 29	21,341 39	8,899 60	10,882 45
Total Liabilities and Reserves....	66,478 43	70,831 18	107,666 19	112,256 09
Percentage of Net Debt to Total Assets	59.5	50.5	80.1	76.8

"A"—Continued

of Hydro Municipalities as at December 31st, 1914 and 1915

Preston 4,942		Waterloo 4,908		Dundas 4,687		Goderich 4,676	
1914	1915	1914	1915	1914	1915	1914	1915
\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.
.....	.....	4,683 07	4,740 85	137 92	2,803 50	12,874 90	12,915 81
13,556 37	13,667 48	17,955 85	18,146 58	2,174 12	6,527 27	5,067 27	7,266 83
32,190 73	36,090 52	33,814 17	35,280 24	36,245 57	38,889 98	23,277 27	24,131 48
.....
11,539 00	12,800 35	7,033 53	8,992 44	6,338 53	7,851 91	6,281 16	6,587 57
9,939 77	11,085 14	8,342 63	9,566 70	6,971 99	7,226 28	10,292 45	9,970 58
1,909 53	2,561 53	5,133 01	5,191 76	1,708 19	1,708 67	4,442 79	4,495 29
.....
4,910 22	5,255 35	1,181 50	1,266 56	5,509 47	5,984 67	1,967 26	1,967 26
.....	.....	2,483 64	2,483 64	.....	.....	.....	.....
23,549 22	23,549 22	10,082 50	9,666 15	2,110 38	2,110 38	10,005 00	9,230 65
.....
97,594 84	105,009 59	90,709 90	95,334 92	61,196 17	73,102 66	74,208 10	76,565 47
.....	.....	.....	37 27	.....	.....	1,386 34	161 43
1,330 03	812 11	1,068 69	1,559 42	1,159 87	1,810 49	393 79	232 87
5,938 37	5,139 61	3,342 01	5,206 24	1,855 86	.....	1,463 38	7,375 10
.....	.....	1,440 00	1,728 00	.....	.....	2,651 50	2,767 40
.....	.....	2,203 90	.....	.....	.....	.....	.....
104,863 24	110,961 31	98,764 50	103,865 85	64,211 90	74,913 15	80,103 11	87,102 27
.....
71,055 09	67,984 96	63,943 13	62,915 67	51,728 16	50,905 67	54,542 69	52,925 75
1,791 90	2,073 75	841 87	1,440 00	.....	.....	13	.....
5,890 54	8,735 25	1,182 27	.....	3,316 39	11,155 46	.....	.....
.....
78,737 53	78,793 96	65,967 27	64,355 67	55,044 55	62,061 13	54,542 82	52,925 75
.....
6,810 42	9,880 55	2,056 87	3,084 33	1,271 84	2,094 33	1,545 36	3,162 30
.....	.....	1,440 00	1,728 00	.....	.....	2,651 50	2,767 40
9,748 34	13,548 34	11,450 00	15,450 00	4,183 00	7,083 00	2,920 00	6,670 00
9,566 95	8,738 46	17,850 36	19,247 85	3,712 51	3,674 69	18,443 43	21,576 82
104,863 24	110,961 31	98,764 50	103,865 85	64,211 90	74,913 13	80,103 11	87,102 27
.....
75.1	71.0	66.8	63.5	85.7	82.3	68.1	60.7

"A"—Continued

of Hydro Municipalities as at December 31st, 1914 and 1915

Simcoe 4,160	Brampton 4,160		Penetanguishene 4,107		Wallaceburg 4,107	St. Mary's 3,960	
1915	1914	1915	1914	1915	1915	1914	1915
\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.
1,486 55	3,808 08	3,808 08	2,151 00	2,151 00	1,753 84	13,674 27	13,674 27
3,668 01	5,183 67	5,200 25	3,507 71	3,507 71	.....	12,914 54	13,002 74
17,194 16	31,669 90	31,951 88	23,287 26	24,333 58	10,401 94	18,883 72	22,025 40
.....
1,786 07	9,323 69	9,141 24	3,524 17	3,846 07	1,799 07	9,918 40	10,695 83
1,117 47	8,580 90	9,403 89	5,026 26	5,191 76	2,931 10	8,720 68	12,709 33
1,478 85	1,785 82	1,799 02	1,721 40	1,721 95	70 55	2,667 79	5,049 39
1,181 83	.....	.....	.....	.....	.....	.....	.....
3,140 28	2,895 62	2,904 61	278 93	278 93	2,302 41	1,601 75	1,713 53
.....
931 92	15,000 00	15,000 00	2,939 00	2,874 00	26,017 56	.....	.....
.....
31,985 14	78,247 68	79,208 97	42,435 73	43,905 00	45,276 47	68,381 15	78,870 49
.....
4,636 00	1,529 90	5,663 24	.....	.....	.....	494 37	3,430 53
395 45	459 64	129 84	834 46	513 50	784 15	716 75	1,207 66
789 90	.....	.....	2,650 00	3,659 27	1,276 81	1,685 00	1,685 00
.....	.....	.....	.....	.....	.....	1,049 31	1,594 91
.....	.....	.....	.....	.....	.....	8,550 00	.....
.....
37,806 49	80,237 22	85,002 05	45,920 19	48,077 77	47,337 43	80,876 58	86,788 59
.....
.....
35,434 90	64,896 56	63,070 87	28,858 61	28,197 45	44,389 16	44,900 97	42,635 27
281 46	.....	.....	.....	.....	1,229 34	5,810 72	5,980 63
.....	.....	.....	1,835 36	1,712 04	569 54	.....	.....
.....	.....	.....	.....	.....	450 00	.....	.....
.....
35,716 36	64,896 56	63,070 87	30,694 97	29,909 49	46,638 04	50,711 69	48,615 90
.....
.....	4,154 08	5,979 77	2,141 39	2,802 55	610 84	18,346 05	20,611 75
.....	.....	.....	.....	.....	.....	1,049 31	1,594 91
.....	8,200 00	11,200 00	5,445 00	7,445 00	.....	3,340 00	6,940 00
2,090 13	2,986 58	4,751 41	7,638 83	7,920 73	88.55	7,429 53	9,026 03
.....
37,806 49	80,237 22	85,002 05	45,920 19	48,077 77	47,337 43	80,876 58	86,788 59
.....
94.4	80.9	74.2	66.8	62.2	98.5	62.7	56.0

STATEMENT

Comparative Condensed Balance Sheets of Electric Departments

Municipality	Tillsonburg		Strathroy	Prescott	
Population	3,050		2,988	2,919	
—	1914	1915	1915	1914	1915
ASSETS	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.
Lands and Buildings	1,974 27	1,974 27	1,070 00	2,743 35	2,753 04
Sub-Station Equipment	6,818 47	6,818 47	4,175 40	.....	.....
Distribution System, Overhead.....	17,736 20	18,252 15	15,841 42	22,956 43	23,886 23
“ “ Underground.....	.....	.....	.....	.....	.....
Line Transformers.....	4,041 90	4,041 90	3,211 14	5,028 36	5,028 61
Meters.....	4,294 27	4,638 91	3,534 75	7,151 98	7,354 45
Street Light Equipment, Regular...	1,762 50	1,762 50	1,463 28	1,218 43	1,288 30
“ “ Ornamental.....	.....	.....	.....	.....	.....
Miscel. Equip. and Construction Exp.	918 83	918 83	555 15	731 22	1,118 53
Steam or Hydraulic Plant.....	.....	.....	.....	12,108 35	12,108 35
Old Plant.....	.....	.....	12,824 13	.....	.....
Total Plant.....	37,546 44	38,407 03	42,675 27	51,938 12	53,537 51
Bank and Cash Balance.....	2,383 67	3,804 89	3,496 96	247 58	.....
Inventories.....	978 42	1,271 84	152 66	.....	.....
Accounts Receivable.....	3,349 04	3,331 74	.....	603 29	441 53
Sinking Fund.....	.....	880 26	.....	.....	460 00
Other Assets.....	.....	.....	.....	.....	.....
Total Assets.....	44,257 57	47,695 76	46,324 89	52,788 99	54,439 04
LIABILITIES AND RESERVES					
Liabilities					
•Debenture Balance.....	33,907 07	33,605 10	15,486 92	14,008 13	22,548 34
Accounts Payable.....	600 00	700 00	26,941 40	5,711 54	350 00
Bank Overdraft.....	.....	.....	.....	.....	115 78
Other Liabilities.....	.....	.....	.....	280 00	.....
Total Liabilities.....	34,507 07	34,305 10	42,428 32	19,999 67	23,014 12
Reserves					
Debentures Paid.....	2,092 93	2,394 90	745 08	771 21	1,431 00
Sinking Fund Reserve.....	.....	880 26	.....	.....	460 00
Depreciation Reserve.....	4,436 50	6,311 50	1,500 00	1,950 00	1,950 00
Surplus.....	3,221 07	3,804 00	1,651 49	30,068 11	27,583 92
Total Liabilities and Reserves....	44,257 57	47,695 76	46,324 89	52,788 99	54,439 04
Percentage of Net Debt to Total Assets	78.0	71.9	91.6	37.9	42.3

"A"—Continued

of Hydro Municipalities as at December 31st, 1914 and 1915

Hespeler 2,634		Elmira 2,200		Weston 2,186		Clinton 2,112	
1914	1915	1914	1915	1914	1915	1914	1915
\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.
3,499 23	3,499 23			3,230 94	3,230 94		
8,506 64	8,471 64			4,985 23	4,985 23	4,144 87	7,738 47
6,244 06	6,686 61	8,793 62	9,009 28	11,349 65	11,875 08	10,302 76	10,391 70
3,971 30	4,880 87	2,112 02	2,317 42	4,334 55	4,871 82	1,937 64	2,139 79
4,111 93	4,175 69	2,214 61	2,550 46	3,221 68	3,848 68	2,649 27	2,683 27
753 50	815 07	570 67	578 29	1,893 15	1,914 16	206 41	206 41
93.08	93 08	2,076 74	2,076 74	2,959 67	2,831 67	3,293 18	3,310 45
3,000 00	3,000 00	2,296 27	2,296 27			13,491 00	13,456 00
30,179 74	31,622 19	18,063 93	18,828 46	31,974 87	33,557 58	36,025 13	39,926 09
1,113 29	2,522 35	3,542 98	5,000 25				392 93
		131 83	96 03	152 16	117 23	407 00	736 86
549 71	184 33		139 85	595 33	1,344 16	585 46	71 67
2,594 35	b 1108 06				2,096 65	792 40	1,584 80
				805 13		70 37	
34,437 09	35,436 93	21,738 74	24,064 59	33,527 49	37,175 62	37,880 36	42,712 35
28,452 44	26,720 76	19,747 02	19,494 04	17,945 62	17,234 76	30,000 00	40,500 00
516 58	141 42			811 38	1,449 79	6,530 26	247 35
				172 02		557 70	
				1,642 76	1,350 57		
28,969 02	26,862 18	19,747 02	19,494 04	20,571 78	20,035 12	37,087 96	40,747 35
4,118 07	5,849 75	252 98	505 96	2,022 26	2,733 12		
						792 40	1,584 80
1,350 00	2,725 00	650 00	1,400 00	4,100 00	5,620 00		380 20
		1,088 74	2,664 59	6,833 45	8,787 38		
34,437 09	35,436 93	21,738 74	24,064 59	33,527 49	37,175 62	37,880 36	42,712 35
84.0	75.7	90.8	81.0	61.7	53.9	97.9	95.4

STATEMENT

Comparative Condensed Balance Sheets of Electric Departments

Municipality Population	Georgetown 2,002		Mimico 1,965	
	1914	1915	1914	1915
ASSETS	\$ c.	\$ c.	\$ c.	\$ c.
Lands and Buildings	12 00	12 00	98 30	98 30
Sub-Station Equipment	11,080 32	13,646 65	14,785 46	16,958 20
Distribution System, Overhead.....	.....	.....	.....	.....
" " Underground..	4,284 36	5,233 91	1,065 00	1,592 62
Line Transformers.....	2,951 43	3,564 24	3,956 64	4,953 01
Meters.....	903 94	956 14	655 46	1,022 20
Street Light Equipment, Regular...	.....	.....	.....	.....
" " Ornamental.	939 53	1,184 25	1,103 49	1,355 99
Miscel. Equip. and Construction Exp.	2,209 80	2,209 80	.....	.....
Steam or Hydraulic Plant.....	.....	.....	.....	.....
Old Plant.....	.....	.....	.....	.....
Total Plant.....	22,381 38	26,806 99	21,664 35	25,980 32
Bank and Cash Balance.....	1,750 51	994 45	271 50	459 59
Inventories.....	478 75	608 73	323 01	133 03
Accounts Receivable.....	82 50	457 38	161 82	531 59
Sinking Fund.....	.....	.....	.....	.....
Other Assets.....	.....	.....	.....	.....
Total Assets.....	24,693 14	28,867 55	22,420 68	27,104 53
LIABILITIES AND RESERVES				
Liabilities				
Debenture Balance.....	19,747 02	19,478 86	14,322 69	16,858 35
Accounts Payable.....	.....	306 80	4,251 38	3,458 89
Bank Overdraft.....	.....	.....	.....	.....
Other Liabilities.....	.....	.....	.....	.....
Total Liabilities.....	19,747 02	19,785 66	18,574 07	20,317 24
Reserves				
Debentures Paid.....	252 98	512 14	677 31	1,141 65
Sinking Fund Reserve.....	.....	.....	.....	.....
Depreciation Reserve.....	1,150 00	2,430 00	1,660 00	2,860 00
Surplus.....	3,543 14	6,130 75	1,509 30	2,785 64
Total Liabilities and Reserves....	24,693 14	28,867 55	22,420 68	27,104 53
Percentage of Net Debt to Total Assets	80.0	68.5	82.8	74.9

"A"—Continued

of Hydro Municipalities as at December 31st, 1914 and 1915

Milton 1,942		Seaforth 1,871		Acton 1,803		Tilbury 1726	Mitchell 1,706	
1914	1915	1914	1915	1914	1915	1915	1914	1915
\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.
.....	.....	1,194 00	1,203 25	1,500 00	1,500 00	.....	4,550 44	4,550 44
5,550 19	5,550 19	6,031 75	6,031 75	597 62	597 62	.....	9,034 86	9,034 86
9,144 70	10,354 52	14,166 06	14,700 33	4,763 72	4,839 74	5,268 42	6,756 16	7,631 03
.....
1,462 85	1,881 05	2,733 80	3,212 30	1,535 50	1,696 50	1,057 60	883 82	1,113 82
2,901 68	3,126 86	3,351 87	3,642 67	1,893 40	2,109 15	1,563 05	2,193 62	2,564 87
935 43	935 43	797 34	797 34	892 61	896 21	176 35	823 16	978 00
.....
2,476 90	2,486 23	355 98	355 98	777 99	777 99	893 10	.....	.....
.....	.....	.....	.....	.....	.....	.....	1,500 00	1,500 00
4,712 98	4,344 48	.....	.....	3,550 00	3,510 85	4,244 20	.....	.....
.....
27,184 73	28,678 76	28,630 80	29,943 62	15,510 84	15,928 06	13,202 72	25,742 06	27,373 02
.....
1,927 78	1,171 63	962 98	628 68	457 02	2,200 50	218 47	324 77	1,354 31
813 65	1,882 83	1,453 45	2,686 32	75 00	276 03	129 87	531 39	800 00
4,007 26	2,737 21	46 34	130 57	130 00	.....	2,065 75	1,560 00	337 97
.....	.....	1,391 45	1,892 86	3,954 00	4,156 00	.....	.....	.....
.....
33,933 42	34,470 43	32,485 02	35,282 05	20,126 86	22,560 59	15,616 81	28,158 22	29,865 30
.....
.....
22,510 00	21,274 54	25,000 00	25,000 00	14,242 94	13,973 03	9,873 52	10,094 81	8,816 25
.....	.....	.....	.....	.....	322 00	5,350 46	359 21	993 33
.....
.....
22,510 00	21,274 54	25,000 00	25,000 00	14,242 94	14,295 03	15,223 98	10,454 02	9,809 58
.....
2,202 98	3,438 44	.....	.....	257 06	526 97	126 48	4,756 97	6,036 53
.....	.....	1,391 45	1,892 86	3,954 00	4,156 00	.....	.....	.....
2,150 00	3,240 00	2,700 00	4,150 00	1,000 00	1,500 00	.....	3,377 21	4,377 21
7,070 44	6,517 45	3,393 57	4,239 19	672 86	2,082 59	266 35	9,570 02	9,641 98
.....
33,933 42	34,470 43	32,485 02	35,282 05	20,126 86	22,560 59	15,616 81	28,158 22	29,865 30
.....
66.0	61.7	77.0	70.8	70.7	63.4	97.6	37.1	32.8

STATEMENT

Comparative Condensed Balance Sheets of Electric Departments

Municipality Population	New Hamburg 1,612		Fergus 1,605		Dresden 1,444
—	1914	1915	1914	1915	1915
ASSETS	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.
Lands and Buildings	2,257 59	2,257 59	.....	.....	.....
Sub-Station Equipment	1,083 10	1,083 10	.....	.....	523 00
Distribution System, Overhead.....	8,039 43	8,114 35	7,469 45	8,144 42	5,999 51
“ “ Underground.....	.....	.....	.....	.....	.....
Line Transformers.....	2,664 75	2,664 75	486 65	2,074 38	1,418 21
Meters.....	2,830 27	3,127 07	1,742 13	2,109 83	2,605 72
Street Light Equipment, Regular..	1,077 93	1,149 43	809 10	826 27	715 38
“ “ Ornamental.....	.....	.....	.....	.....	.....
Miscel. Equip. and Construction Exp.	958 48	958 48	400 71	543 57	398 43
Steam or Hydraulic Plant.....	.....	.....	.....	.....	.....
Old Plant.....	5,324 56	5,242 56	2,863 00	2,546 59	6,026 59
Total Plant.....	24,236 11	24,597 33	13,771 04	16,245 06	17,686 84
Bank and Cash Balance.....	.....	202 24	131 94	.....	644 67
Inventories.....	4,300 42	4,511 38	1,734 01	2,750 83	542 22
Accounts Receivable.....	1,140 54	1,083 13	.....	.....	.....
Sinking Fund.....	.....	.....	.....	.....	.....
Other Assets.....	.....	.....	545 21	.....	.....
Total Assets.....	29,677 07	30,394 08	16,182 20	18,995 89	18,873 73
LIABILITIES AND RESERVES					
Liabilities					
Debenture Balance.....	16,838 31	16,509 00	16,000 00	15,779 11	15,950 94
Accounts Payable.....	288 00	1,217 86	.....	.....	2,503 99
Bank Overdraft.....	2,228 53	.....	.....	1,483 32	.....
Other Liabilities.....	.....	.....	182 20	.....	.....
Total Liabilities.....	19,354 84	17,726 86	16,182 20	17,262 43	18,454 93
Reserves					
Debentures Paid.....	890 77	1,220 08	.....	220 89	287 31
Sinking Fund Reserve.....	.....	.....	.....	.....	.....
Depreciation Reserve.....	2,945 00	3,845 00	.....	650 00	.....
Surplus.....	6,486 46	7,602 14	.....	862 57	131 49
Total Liabilities and Reserves...	29,677 07	30,394 08	16,182 20	18,995 89	18,873 73
Percentage of Net Debt to Total Assets	65.2	58.1	100	90.8	98.0

"A"—Continued

of Hydro Municipalities as at December 31st, 1914 and 1915

Pt. Dalhousie 1,318		Norwich 1,301		Elora 1,216		Caledonia 1,202		Victoria Harbor 1,200
1914	1915	1914	1915	1914	1915	1914	1915	1915
\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.
.....	.....	829 17	910 40	.....	.....	.....	.....	.....
3,023 09	3,273 52	6,373 65	6,504 04	6,138 53	7,189 83	4,283 96	4,651 20	134 49
1,732 75	1,792 00	828 37	1,149 41	803 21	1,250 05	318 00	391 65	.....
185 71	2,124 13	2,004 51	2,293 66	1,068 18	1,391 03	673 22	761 27	265 85
220 95	268 67	546 06	546 06	438 33	438 33	282 27	349 62	.....
386 66	1,081 66	680 54	963 17	839 00	908 18	473 20	473 20	21 34
6,325 50	6,325 50	3,509 82	3,509 82	2,100 00	1,482 85	.....	.....	4,800 00
11,874 66	14,865 48	14,772 12	15,876 56	11,387 25	12,661 27	3,030 65	6,626 94	5,221 68
703 77	.....	471 76	2,261 99	10 34	30 21	11 61	217 29	1,680 05
33 10	385 50	993 00	2,038 83	342 12	576 62	.....	.....	.....
.....	712 08	1,706 42	672 30	.....	.....	189 00	.....	.....
.....	.....	.....	455 90	.....	.....	.....	.....	.....
12,611 53	15,963 06	17,946 30	21,305 58	11,739 71	13,268 10	6,231 26	6,844 23	6,901 73
.....	12,500 00	13,198 79	12,963 89	9,790 48	9,570 48	4,624 00	4,539 72	6,500 00
.....	1,953 12	518 09	901 19	1,709 52	2,639 52	259 17	50 05	211 83
11,646 74	42 20	.....	.....	.....	.....	.....	.....	45 97
11,646 74	14,495 32	13,716 88	13,865 08	11,500 00	12,210 00	4,883 17	4,589 77	6,757 80
.....	.....	557 21	792 11	209 52	429 52	.....	84 28	.....
864 02	1,279 02	1,030 00	2,225 00	.....	460 00	510 00	810 00	.....
100 77	188 72	2,642 21	4,423 39	30 19	168 58	838 09	1,360 18	143 93
12,611 53	15,963 06	17,946 30	21,305 58	11,739 71	13,268 10	6,231 26	6,844 23	6,901 73
92.5	90.8	76.4	65.1	97.1	92.0	78.4	67.6	97.9

"A"—Continued

of Hydro Municipalities as at December 31st, 1914 and 1915

Winchester 1,044		Beaverton 965		Stayner 950		Port Credit 944	
1914	1915	1914	1915	1914	1915	1914	1915
\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.
200 00	224 15	250 00	250 00	.....	.....	675 00	675 00
7,001 51	7,225 62	4,513 16	5,912 64	1,301 96	200 00 3,467 35	7,332 36	7,613 47
481 86	481 86	193 24	470 75	300 00	959 03	747 98	722 48
997 19	1,014 44	70 95	1,720 22	635 78	875 08	1,652 18	1,826 78
564 98	564 98	399 83	453 44	86 31	386 31	294 99	294 99
521 22	264 14	418 32	1,141 32	128 40	128 40	614 26	614 26
1,100 00	1,100 00	4,000 00	3,787 92	7,657 15	4,490 15	.....	.....
10,866 76	10,875 19	9,845 50	13,736 29	10,109 60	10,506 32	11,316 77	11,746 98
.....	1,621 20	683 07	865 12	.....	641 00	.....	986 91
583 44	881 74	264 76	403 42	34 38	66 44	.....	.....
.....	.....	.....	.....	871 94	.....	180 00	180 00
.....	.....	.....	b 864 69	.....	.....	.....	.....
11,450 20	13,378 13	10,793 33	15,869 52	11,015 92	11,213 76	11,496 77	12,913 89
.....	10,515 30	10,000 00	9,691 45	8,496 00	8,221 10	7,144 09	7,013 39
9,580 89	200 00	793 33	5,869 52	1,005 07	1,072 16	1,300 48	1,495 16
.....	.....	.....	.....	572 29	.....	61 94	.....
9,580 89	10,715 30	10,793 33	15,560 97	10,073 36	9,293 26	8,506 51	8,508 55
.....	134 70	.....	308 55	504 00	778 90	355 91	486 61
500 00	965 00	.....	.....	115 00	415 00	981 00	1,581 00
1,369 31	1,563 13	.....	.....	323 56	726 60	1,653 35	2,337 73
11,450 20	13,378 13	10,793 33	15,869 52	11,015 92	11,213 76	11,496 77	12,913 89
83.7	80.1	100	.....	91.4	82.7	74.0	66.0

"A"—Continued

of Hydro Municipalities as at December 31st, 1914 and 1915

Chesterville 885		Port Stanley 876		Waterdown 817		Elmvale 775	
1914	1915	1914	1915	1914	1915	1914	1915
\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.
.....	.....	1,505 38	1,505 38	.....	.....	106 25	106 25
4,098 65	5,058 44	8,861 69	9,322 94	6,241 13	7,024 71	5,373 48	5,687 64
.....
174 78	401 48	1,256 56	1,495 56	1,645 24	1,663 58	432 87	755 41
236 80	977 19	1,736 26	1,960 26	1,176 47	1,319 36	825 05	1,003 45
160 34	306 46	570 60	570 60	156 65	156 65	298 93	317 98
.....
479 12	552 68	5,517 16	5,517 16	88 34	100 34	455 93	455 93
.....
.....	.....	1,000 00	1,000 00	.....	.....	.....	.....
5,149 69	7,296 25	20,447 65	21,371 90	9,307 83	10,264 64	7,492 51	8,326 66
696 36	383 85	4,029 25	4,495 30	259 05	1,273 49	.....	.....
.....	578 75	.....	.....	104 26	4 44	.....	251 86
50 00	.....	.....	.....	.....	.....	224 42	95 11
.....
.....	b 54 47	.....	.....	.....	.....	.....	.....
5,896 05	8,313 32	24,476 90	25,867 20	9,671 14	11,542 57	7,716 93	8,673 63
.....
4,931 00	4,858 20	17,828 48	17,487 16	6,096 89	7,430 16	6,784 01	6,667 85
602 44	2,807 38	40 00	20 00	1,200 41	.....	.....	169 22
.....	.....	.....	.....	.....	.....	287 81	192 46
17 47	258 44	.....	.....	.....	.....	.....	.....
5,550 91	7,924 02	17,868 48	17,507 16	7,297 30	7,430 16	7,071 82	7,029 53
69 00	141 80	1,121 52	1,462 84	403 11	569 84	215 99	332 15
.....
247 50	247 50	2,338 08	3,078 08	785 00	1,785 00	350 00	735 00
28 64	.....	3,148 82	3,819 12	1,185 73	1,757 57	79 12	576 95
5,896 05	8,313 32	24,476 90	25,867 20	9,671 14	11,542 57	7,716 93	8,673 63
94.1	95.4	72.1	67.7	74.8	64.4	91.6	81.0

STATEMENT

Comparative Condensed Balance Sheets of Electric Departments

Municipality	Lucan	Baden		Thamesville	Bothwell
Population	720	710		708	707
—	1915	1914	1915	1915	1915
ASSETS	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.
Lands and Buildings		660 64	660 64		
Sub-Station Equipment					
Dist. System, Overhead....	5,327 10	3,575 21	3,869 75	3,418 12	3,153 38
“ “ Underground.....					
Line Transformers	811 56	640 67	1,035 14	879 01	432 00
Meters	1,191 31	670 95	786 78	800 96	879 40
Street Light Equip., Regular	372 54	370 02	370 02	305 70	316 75
“ “ “ Ornamental					
Miscel. Equip. and Con. Exp.	369 01			392 35	297 15
Steam or Hydraulic Plant.....					
Old Plant	3,204 10			4,893 30	534 19
Total Plant	11,275 62	5,917 49	6,722 33	10,689 44	5,612 87
Bank and Cash Balance ...	414 07	1,265 29	1,984 76		266 82
Inventories	799 05	6 71			
Accounts Receivable				917 65	155 00
Sinking Fund					
Other Assets	b 21 08				
Total Assets	12,509 82	7,189 49	8,707 09	11,607 09	6,034 69
LIABILITIES AND RESERVES					
Liabilities					
Debenture Balance	11,213 62	4,759 59	4,672 31	4,937 80	534 19
Accounts Payable	1,296 20	350 00	740 69	1,463 42	508 79
Bank Overdraft				4,985 59	4,832 16
Other Liabilities					
Total Liabilities	12,509 82	5,109 59	5,413 00	11,386 81	5,875 14
Reserves					
Debentures Paid		240 41	327 69		
Sinking Fund Reserve					
Depreciation Reserve		557 00	857 00		
Surplus		1,282 49	2,109 40	220 28	159 55
Total Liabilities and Reserves	12,509 82	7,189 49	8,707 09	11,607 09	6,034 69
Percentage of Net Debt to Total Assets	100.0	71.1	62.2	96.0	97.0

"A"—Continued

of Hydro Municipalities as at December 31st, 1914 and 1915

Burford 700	Bolton 674	Woodbridge 651	Rockwood 650		Coldwater 609		Waubesa'shene 600
1915	1915	1915	1914	1915	1914	1915	1915
\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.
202 00			79 00	79 00	275 00	275 00	
3,119 31	6,442 50	5,278 03	3,743 79	3,866 93	5,278 18	5,278 18	2,637 80
868 50	998 38	1,667 57	853 43	972 93	1,010 77	1,010 77	239 66
401 42	875 60	787 58	648 08	781 60	1,060 96	1,114 04	532 86
147 40	561 14	314 81	254 58	254 58	354 20	354 20	142 22
654 70	681 75	471 26	277 01	277 01	132 53	132 53	257 66
	2,236 60						
5,393 33	11,795 97	8,519 25	5,855 89	6,232 05	8,111 64	8,164 72	3,810 20
	167 06	752 97				117 78	365 41
	248 90	15 93	83 31	80 56	1,195 69	724 86	62 23
	73 75	118 91			268 72		99 64
b 46 63						354 25	
5,439 96	12,285 68	9,407 06	5,939 20	6,312 61	9,576 05	9,361 61	4,337 48
4,848 79	9,357 01	8,499 97	1,627 97	1,427 82	6,903 36	6,801 40	
280 46	2,694 24				81 66	90 00	4,164 57
104 60			2,413 87	2,118 28	653 84		
54 90							
5,288 75	12,051 25	8,499 97	4,041 84	3,546 10	7,638 86	6,891 40	4,164 57
151 21	142 99		372 03	572 18	96 64	198 60	
		425 00	275 00	575 00	755 00	1,135 00	
	91 44	482 09	1,250 33	1,618 33	1,085 55	1,136 61	172 91
5,439 96	12,285 68	9,407 06	5,939 20	6,312 61	9,576 05	9,361 61	4,337 48
97.4	98.0	89.0	68	56.2	79.8	73.6	96.0

STATEMENT

Comparative Condensed Balance Sheets of Electric Departments

Municipality Population	St. George 600	Prince- ton 600	Creemore 590		Sunderland 570	
—	1915	1915	1914	1915	1914	1915
ASSETS	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.
Lands and Buildings						
Sub-Station Equipment						
Distribution System, Overhead.....	2,759 81	1,671 68	3,459 73	4,150 11	2,281 98	2,731 81
“ “ Underground.....						
Line Transformers.....	851 31	297 70	315 48	681 39	470 00	470 00
Meters.....	739 43	342 96	570 00	738 56		639 40
Street Light Equipment, Regular...	218 11	116 30	261 17	272 07	153 02	190 82
“ “ Ornamental.....						
Miscel. Equip. and Construction Exp.	374 18	27 85	111 89	185 41	21 74	147 22
Steam or Hydraulic Plant.....						
Old Plant.....				2,651 15	2,030 00	2,030 00
Total Plant.....	4,942 84	2,456 49	4,718 27	8,678 69	4,956 74	6,209 25
Bank and Cash Balance.....	593 44	1,163 08	316 52	326 56	843 26	
Inventories.....	87 69		131 10	214 94		148 27
Accounts Receivable.....	814 32			73 31		
Sinking Fund.....						
Other Assets.....						b 607 85
Total Assets.....	6,438 29	3,619 57	5,165 89	9,293 50	5,800 00	6,965 37
LIABILITIES AND RESERVES						
Liabilities						
Debenture Balance.....	5,917 17	3,496 57	4,602 75	6,323 31	5,800 00	5,635 45
Accounts Payable.....	229 55			2,655 76		320 00
Bank Overdraft.....			348 85			845 37
Other Liabilities.....						
Total Liabilities.....	6,146 72	3,496 57	4,951 60	8,979 07	5,800 00	6,800 82
Reserves						
Debentures Paid.....	82 83	53 43		176 69		164 55
Sinking Fund Reserve.....						
Depreciation Reserve.....						
Surplus.....	208 74	69 57	214 29	137 74		
Total Liabilities and Reserves....	6,438 29	3,619 57	5,165 89	9,293 50	5,800 00	6,965 37
Percentage of Net Debt to Total Assets	95.6	96.5	95.9	91.5	100	100

"A"—Continued

of Hydro Municipalities as at December, 31st, 1914 and 1915

Platts- ville 550	Beachville 501		Comber k	Brechin k	Drumbo k	Dela- ware k	Dor- chester k	Embro k	Lynden k
1915	1914	1915	1915	1915	1915	1915	1915	1915	1915
\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.
.....	161 03	161 03	.....	.....	.....	.....	.....	.....	100 00
2,478 44	6,314 43	6,376 73	3,328 22	1,330 29	60 58	2,020 90	2,531 45	5,298 84	2,297 50
662 94	604 85	810 45	420 25	366 43	.....	216 75	694 32	480 79	336 18
862 36	600 43	807 66	487 13	315 62	18 60	316 06	641 79	811 24	344 06
133 65	237 03	237 03	199 55	69 89	.....	89 76	183 13	209 29	137 90
504 42	540 36	540 36	929 11	215 77	.....	227 81	267 41	249 84	144 37
.....	.....	.....	.....	.....	3,675 29	.....	.....	426 25	.....
4,641 81	8,458 13	8,933 26	5,364 26	2,298 00	3,754 47	2,871 28	4,318 00	7,476 25	3,360 01
367 22	275 58	764 67	24 73	296 45	819 43	1,235 11	443 20	223 80	1,934 64
12 96	117 45	250 00	.....	.....	6 35	.....	.....	.....	.....
372 60	1,029 60	580 00	.....	9 75	.....	.....	.....	.....	67 50
.....	.....	.....	.....	b1,050 22	.....	.....	.....	.....	.....
5,394 59	9,880 76	10,527 93	5,388 99	3,684 42	4,580 25	4,106 39	4,761 30	7,700 05	5,362 15
5,158 18	5,213 71	5,013 93	4,363 91	1,750 00	4,432 27	4,000 00	4,300 00	.....	4,495 00
19 14	477 97	77 97	831 71	1,934 42	.....	.....	.....	.....	766 66
.....	.....	.....	48 47	.....	.....	24 00	.....	7,399 78	.....
.....	.....	.....	.....	.....	.....	.....	.....	4 95	.....
5,177 32	5,691 68	5,091 70	5,244 09	3,684 42	4,432 27	4,024 00	4,300 00	7,404 73	5,261 66
78 82	146 29	346 07	136 09	.....	67 73	.....	.....	.....	.....
.....	925 00	1,345 00	.....	.....	.....	.....	200 00	250 00	.....
138 45	3,117 79	3,744 96	8 81	.....	80 25	82 39	261 30	45 32	100 49
5,394 59	9,880 76	10,527 93	5,388 99	3,684 42	4,580 25	4,106 39	4,761 30	7,700 05	5,362 15
96.1	57.7	49.1	97.6	100	96.8	98.0	89.5	96.0	98.1

STATEMENT

Comparative Condensed Balance Sheets of Electric Departments

Municipality	Lambeth	Mt. Brydges	Pt. McNicoll	Thamesford	
Population	k	k	k	k	
—	1915	1915	1915	1914	1915
ASSETS	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.
Lands and Buildings			202 60		
Sub-Station Equipment					
Distribution System, Overhead.....	2,503 51	2,646 79	3,156 54	2,812 54	2,955 44
“ “ Underground.....					
Line Transformers.....	621 01	609 50	250 35	937 05	937 05
Meters.....	639 78	668 71	393 61	833 21	918 91
Street Light Equipment, Regular...	134 37	120 09	103 40	155 62	176 85
“ “ Ornamental.....					
Miscel. Equip. and Construction Exp.	312 68	143 82	396 44	257 89	260 05
Steam or Hydraulic Plant.....					
Old Plant.....					
Total Plant.....	4,211 35	4,188 91	4,502 94	4,996 31	5,248 30
Bank and Cash Balance.....	1,184 06	1 19	127 27	334 68	246 10
Inventories.....		20 05	59 86	4 25	
Accounts Receivable.....	102 03	171 09	129 12		
Sinking Fund.....					
Other Assets.....	b 218 54	b 129 13			
Total Assets.....	5,715 98	4,510 37	4,819 19	5,335 24	5,494 40
LIABILITIES AND RESERVES					
Liabilities					
Debenture Balance.....		4,161 73	4,769 07	3,023 49	2,975 73
Accounts Payable.....	5,715 98	290 37		1,681 81	1,281 81
Bank Overdraft.....					
Other Liabilities.....					7 62
Total Liabilities.....	5,715 98	4,452 10	4,769 07	4,705 30	4,265 16
Reserves					
Debentures Paid.....		58 27		34 51	82 27
Sinking Fund Reserve.....					
Depreciation Reserve.....				250 00	500 00
Surplus.....			50 12	345 43	646 97
Total Liabilities and Reserves....	5,715 98	4,510 37	4,819 19	5,335 24	5,494 40
Percentage of Net Debt to Total Assets	100.0	98.5	99.0	88.0	77.6

“a” Approximate figures only. Accounts not yet fully audited.

“b” Operating losses shown in italics.

“d” All street light equipment paid for by debentures carried in the general account, and the fixed charges raised by tax levy.

“A”—Concluded

of Hydro Municipalities as at December 31st, 1914 and 1915

Woodville		Williamsburg	Thorndale		Toronto Township	
k		k	k			
1914	1915	1915	1914	1915	1914	1915
\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.
966 94	1,397 49	1,478 83	1,738 15	1,863 71	778 22	1,555 50
27 00	550 50	297 89	381 71	381 71		214 91
	543 43	427 57	466 53	466 53		355 15
46 72	91 57	66 16	59 40	59 40		
31 45	88 96	4 00	148 95	273 95		
2,250 00	2,250 00					
3,322 11	4,921 95	2,274 45	2,794 74	3,045 30	778 22	2,125 66
677 89		636 27	13 50	61 50	905 45	1,910 90
	648 75	168 91	45 21	13 76		
				294 00	2,339 06	914 56
	b 1,647 66					
4,000 00	7,218 36	3,079 63	2,853 45	3,414 56	4,022 73	4,951 02
4,000 00	3,944 36	2,666 83	2,432 24	2,500 00		
	3,175 45	52 39	100 00	222 30	974 44	1,314 54
	42 91	220 67				
4,000 00	7,162 72	2,939 89	2,532 24	2,722 30	974 44	1,314 54
	55 64	83 17				
			130 00	265 00		1,800 00
			191 21	427 26	3,048 29	1,836 48
4,000 00	7,218 36	3,079 63	2,853 45	3,414 56	4,022 73	4,951 02
100		95.5	88.7	79.8		26.6

“e” Exhibition construction.
“f” Work orders in progress.
“h” Sandwich construction.
“i” Discount on debentures.
“k” Population, under 500.

STATE

Report Showing Operation of Municipalities

Municipality	Months Covered by Report	Population	Plant Cost	Debenture Debt and Overdraft	Operation and Maintenance	Fixed Charges	Total Operation
			\$ c.	\$ c.	\$ c.	\$ c.	\$ c.
Toronto.....	12	470,144	6,884,708 93	6,677,519 51	956,481 51	362,337 99	1,318,821 50
Ottawa.....	12	101,785	887,204 23	550,940 57	129,523 19	40,365 58	169,888 77
Hamilton....	12	101,344	1,020,067 41	981,757 50	182,762 17	60,946 11	243,708 28
London.....	12	56,358	723,930 24	562,670 58	186,573 48	38,493 89	225,067 37
Brantford....	12	26,389	257,995 72	228,723 08	36,929 82	14,686 37	51,616 19
Windsor.....	12	22,993	389,024 86	399,090 64	53,451 15	13,038 53	66,489 68
Peterborough.	12	20,653	173,320 55	159,102 92	73,450 85	13,372 97	86,823 82
Berlin.....	12	19,056	346,168 38	197,325 63	67,382 34	18,436 93	85,819 27
Port Arthur..	12	18,324	670,302 59	510,313 86	82,066 52	46,493 09	128,559 61
St. Catharines	12	17,296	198,730 92	187,309 45	31,803 04	9,724 03	41,527 07
Stratford....	12	17,006	216,160 04	175,731 33	46,327 30	14,398 80	60,726 10
Guelph.....	12	16,799	218,065 37	115,482 46	54,274 90	10,273 28	64,548 18
St. Thomas..	12	16,794	182,122 40	118,035 07	63,405 98	8,359 74	71,765 72
Chatham.....	10	12,714	129,781 16	137,533 32	11,712 08	5,463 80	17,175 88
Galt.....	12	12,060	256,668 37	185,023 77	42,685 89	13,269 15	55,955 04
Woodstock...	12	10,265	150,427 74	71,038 39	30,905 45	7,290 95	38,196 40
Welland.....	12	7,243	95,885 63	102,756 18	34,371 79	8,660 08	43,031 87
Barrie.....	12	7,088	106,834 33	49,871 34	20,416 88	6,052 29	26,469 17
Midland.....	12	6,375	78,673 32	39,362 52	12,986 79	3,827 60	16,814 39
Collingwood..	12	6,361	60,600 08	35,984 71	17,639 29	3,556 84	21,196 13
Ingersoll....	12	5,200	95,705 96	75,366 00	21,394 77	5,046 35	26,441 12
Preston.....	12	4,942	105,009 59	78,793 96	25,475 13	7,212 87	32,688 00
Waterloo....	12	4,908	95,334 92	62,627 67	22,179 15	4,284 71	26,463 86
Dundas.....	12	4,687	73,102 66	62,061 13	10,892 22	5,706 69	16,598 91
Goderich....	12	4,676	76,565 47	50,158 35	10,978 87	4,447 27	15,426 14
Walkerville..	12	4,565	137,221 09	136,785 94	51,382 83	7,956 95	59,339 78
Paris.....	12	4,383	96,738 42	62,593 28	11,440 13	7,966 15	19,406 28
Simcoe.....	9	4,160	31,985 14	35,716 36	3,136 16	.....	3,136 16
Brampton....	12	4,160	79,208 97	63,070 87	17,523 41	4,799 34	22,322 75
Penetang....	12	4,107	43,905 00	29,909 49	12,755 43	1,981 39	14,736 82
Wallaceburg..	11	4,107	45,276 47	46,638 04	7,417 58	3,580 84	10,998 42
St. Mary's...	12	3,960	78,870 49	47,020 99	11,732 45	4,775 42	16,507 87
Tillsonburg..	12	3,050	38,407 03	33,424 84	11,101 82	2,674 75	13,776 57
Strathroy....	12	2,988	42,675 27	42,428 32	7,133 56	2,719 74	9,853 30
Prescott.....	12	2,919	53,537 51	22,554 12	9,672 01	2,233 12	11,905 13
Hespeler....	12	2,634	31,622 19	26,862 18	9,294 59	3,144 33	12,438 92
Elmira.....	12	2,200	18,828 46	19,494 04	4,536 11	1,356 67	5,892 78
Weston.....	12	2,186	33,557 58	20,035 12	8,401 80	2,352 32	10,754 12
Clinton.....	12	2,115	39,926 09	39,162 55	6,762 43	2,643 15	9,405 58
Georgetown..	12	2,002	26,805 99	19,785 66	10,177 43	1,929 67	12,107 10
Mimico.....	12	1,965	25,980 32	20,317 24	4,550 85	1,790 57	6,341 42
Milton.....	12	1,942	28,678 76	21,274 54	8,014 72	2,270 34	10,285 06
Seaforth....	12	1,871	29,943 62	23,107 14	11,059 56	1,662 37	12,721 93
Acton.....	12	1,803	15,928 06	10,139 03	3,386 08	1,124 06	4,510 14
Tilbury.....	8	1,725	13,202 72	15,223 98	2,255 57	668 57	2,924 14
Mitchell....	12	1,706	27,373 02	9,809 58	6,196 05	2,124 46	8,320 51
New Hamburg	12	1,612	24,597 33	17,726 86	4,846 51	1,303 57	6,150 08
Fergus.....	13	1,605	16,245 06	17,262 43	3,928 25	967 76	4,896 01
Dresden....	8	1,444	17,686 84	18,454 93	2,683 97	754 98	3,438 95
Pt. Dalhousie.	12	1,318	14,865 48	14,495 32	3,681 09	629 04	4,310 13
Norwich.....	12	1,301	15,876 56	13,865 08	4,444 29	1,985 15	6,429 44
Elora.....	12	1,216	12,661 27	12,210 00	2,832 77	846 15	3,678 92
Caledonia....	12	1,202	6,626 94	4,589 77	981 62	361 72	1,343 34
Vict. Harbor..	3	1,200	5,221 68	6,757 80	220 71	.....	220 71
New Toronto.	12	1,153	10,989 88	9,244 49	2,174 21	654 10	2,828 31

MENT "B"

for Period ending December 31st, 1915

Revenue	Surplus	Depreciation	Surplus less Depreciation	Number of Consumers				PerCent. of Con- sumers to Popu- lation	H. P. taken in Dec. 1915
				Dom- estic	Com'l	Power	Total		
\$ c.	\$ c.	\$ c.	\$ c.						
1,589,116 94	270,295 44	.....	270,295 44	29,724	7,227	1,504	38,455	8.2	40,180
203,243 82	33,355 05	33,000 00	355 05	7,338	1,060	140	8,538	8.4	4,209
300,431 83	56,723 55	25,808 87	30,914 68	10,595	1,434	406	12,435	12.4	8,646
285,630 51	60,563 14	32,734 97	27,828 17	7,326	1,046	271	8,643	15.2	6,876
66,296 31	14,680 12	10,000 00	4,680 12	1,615	321	18	1,954	13.4	1,863
71,814 55	5,324 87	.....	5,324 87	2,519	377	43	2,939	12.8	1,374
98,042 12	11,218 30	7,500 00	3,718 30	3,221	602	113	3,936	19.1	2,693
110,380 44	24,561 17	13,500 00	11,061 17	2,032	546	138	2,716	14.1	2,715
162,498 19	33,938 58	.....	33,938 58	2,800	550	50	3,400	18.1	2,340
50,646 36	9,119 29	7,250 00	1,869 29	1,612	192	34	1,838	10.6	2,149
64,065 89	3,339 79	5,250 00	1,910 21	1,724	439	104	2,267	13.3	1,367
77,858 17	13,309 99	10,500 00	2,809 99	1,824	474	81	2,379	14.1	2,628
89,904 48	18,138 76	8,735 00	9,403 76	1,903	434	101	2,438	14.5	1,953
16,454 41	721 47	.....	721 47	949	180	7	1,136	8.9	516
69,721 15	13,766 11	10,000 00	3,766 11	2,038	375	75	2,488	20.1	2,189
51,417 32	13,220 92	6,725 00	6,495 92	1,099	360	62	1,521	12.2	1,046
50,887 23	7,855 36	4,425 00	3,430 36	467	57	23	547	7.6	3,136
30,448 86	3,979 69	3,500 00	479 69	843	252	14	1,109	15.6	511
24,405 77	7,591 39	3,400 00	4,191 39	689	188	39	916	14.4	452
27,025 23	5,829 10	2,600 00	3,229 10	622	233	26	881	13.8	744
31,623 97	5,182 85	3,200 00	1,982 85	497	197	52	746	14.4	811
35,648 51	2,960 51	3,800 00	839 49	714	174	30	918	18.6	1,185
31,861 35	5,397 49	4,000 00	1,397 49	524	162	53	739	15.1	721
19,841 82	3,242 91	2,900 00	342 91	613	160	37	810	.....	593
22,309 53	6,883 39	3,750 00	3,133 39	441	168	8	617	13.2	212
64,981 29	5,641 51	.....	5,641 51	1,159	195	72	1,426	.....	1,079
20,038 90	632 62	.....	632 62	477	150	4	631	14.4	448
5,226 29	2,090 13	.....	2,090 13	35	61	8	104	2.5	97
27,087 58	4,764 83	3,000 00	1,764 83	691	174	21	886	21.0	623
17,018 72	2,281 90	2,000 00	281 90	174	102	15	271	6.6	440
11,086 97	88 55	.....	88 55	368	161	2	531	12.9	180
21,704 37	5,196 50	3,600 00	1,596 50	528	151	33	712	18.0	337
16,234 50	2,457 93	1,875 00	582 93	348	161	15	524	17.3	264
13,004 79	3,151 49	1,500 00	1,651 49	233	147	5	385	12.8	152
13,023 21	1,118 08	2,000 00	881 92	369	145	11	525	18.0	229
15,675 21	3,236 29	1,750 00	1,486 29	272	90	14	376	14.3	397
8,218 63	2,325 85	750 00	1,575 85	185	85	10	280	12.7	107
14,228 05	3,473 93	1,520 00	1,953 93	441	90	9	540	24.7	239
9,856 15	450 57	380 20	70 37	204	110	6	320	15.2	116
15,974 81	3,867 71	1,280 00	2,587 71	295	97	16	408	20.4	241
9,152 70	2,811 28	1,200 00	1,611 28	609	7	3	619	.....	153
10,822 07	537 01	1,090 00	552 99	170	80	7	257	13.2	334
15,017 55	2,295 62	1,450 00	845 62	238	111	11	360	19.3	397
6,419 87	1,909 73	500 00	1,409 73	183	53	5	241	13.4	76
3,190 49	266 35	.....	266 35	123	67	.....	190	10.9	61
9,392 47	1,071 96	1,000 00	71 96	190	95	17	302	17.7	138
8,165 76	2,015 68	900 00	1,115 68	187	70	4	261	16.1	82
6,408 58	1,512 57	650 00	862 57	114	91	7	212	13.2	139
3,570 44	131 49	.....	131 49	185	109	.....	294	20.0	68
4,828 82	518 69	415 00	103 69	250	10	2	262	20.0	107
9,405 62	2,976 18	1,195 00	1,781 18	228	80	5	313	.....	194
4,277 31	598 39	460 00	138 39	89	60	1	150	12.3	57
2,162 42	819 08	300 00	519 08	24	33	1	58	4.8	38
364 64	143 93	.....	143 93	56	34	.....	90	7.5	31
4,339 46	1,511 15	550 00	961 15	153	8	2	162	14.1	137

STATEMENT

Report Showing Operation of Municipalities

Municipality	Months Covered by Report	Population	Plant Cost		Debenture Debt and Overdraft		Operation and Maintenance		Fixed Charges		Total Operation	
			\$	c.	\$	c.	\$	c.	\$	c.	\$	c.
Waterford ...	9	1,134	7,802	88	7,061	92	1,058	98	978	56	2,037	54
Hagersville ..	12	1,091	9,954	88	7,754	37	3,821	37	577	57	4,398	94
Winchester...	12	1,044	10,875	19	10,715	30	3,080	52	795	91	3,876	43
Beaverton ...	14	965	13,736	29	15,560	97	4,237	88	884	64	5,122	52
Stayner	12	950	10,506	32	9,293	26	2,743	51	784	66	3,528	17
Pt. Credit ...	12	944	11,746	98	8,508	55	1,977	27	537	22	2,514	49
Cannington ..	14	917	13,135	74	15,983	72	4,338	25	1,006	80	5,345	05
Ayr	11	910	9,674	05	9,508	09	1,613	63	1,119	49	2,733	12
Dutton	3	890	7,781	63	8,407	49	549	07	144	70	693	77
Chesterville..	12	885	7,296	25	7,924	02	2,306	37	572	55	2,878	92
Pt. Stanley ..	12	876	21,371	90	17,507	16	5,783	31	1,232	82	7,016	13
Waterdown ...	12	817	10,264	64	7,430	16	2,231	15	1,243	23	3,474	38
Elmvale	12	775	8,326	66	7,029	53	1,864	24	546	42	2,410	66
Lucan	11	720	11,275	62	12,509	82	1,951	31	412	43	2,363	74
Baden	12	710	6,722	33	5,413	00	4,606	64	373	71	4,980	35
Thamesville .	3	708	10,689	44	11,386	81	697	37	.....	.....	697	37
Bothwell	3	707	5,612	87	5,880	14	481	52	.....	.....	481	52
Burford	6	700	5,393	33	5,288	75	648	61	201	21	849	82
Bolton	10	674	11,795	97	12,051	25	1,659	89	552	32	2,212	21
Woodbridge ..	12	651	8,519	25	8,499	97	1,122	99	239	38	1,362	37
Rockwood	12	650	6,232	05	3,546	10	1,284	51	445	80	1,730	31
Coldwater	12	614	8,164	72	6,891	40	1,557	47	481	64	2,039	11
Waubashene .	11	600	3,810	20	4,164	57	752	37	220	84	973	21
St. George	4	600	4,942	84	6,146	72	475	45	172	00	647	45
Princeton	11	600	2,456	49	3,550	00	519	07	263	35	782	42
Creemore	12	582	8,678	69	8,979	07	3,002	48	509	55	3,512	03
Sunderland ..	14	570	6,209	25	6,800	82	2,287	36	399	07	2,686	43
Plattsville ...	12	550	4,641	81	5,177	32	2,130	63	386	29	2,516	92
Beachville ...	12	503	8,933	26	5,091	70	4,819	25	357	79	5,177	04
Brechin	12	500	2,298	00	3,684	42	2,664	62	96	80	2,761	43
Comber	7	Under 500	5,364	26	5,244	09	756	00	172	92	928	92
Drumbo	12	" "	3,754	47	4,432	27	846	65	281	33	1,127	98
Delaware	10	" "	2,871	28	4,024	00	289	00	77	13	366	13
Dorchester ...	12	" "	4,318	00	4,300	00	642	01	159	47	801	48
Embro	11	" "	7,476	25	7,404	73	930	28	285	25	1,215	53
Lynden	2	" "	3,360	01	5,261	66	55	95	.....	.....	55	95
Lambeth	9	" "	4,211	35	5,715	98	1,380	89	156	10	1,536	99
Mt. Brydges .	9	" "	4,188	91	4,452	10	1,165	14	358	60	1,523	74
Pt. McNicoll .	11	" "	4,502	94	4,769	07	823	97	203	14	1,027	11
Thamesford ..	12	" "	5,249	30	4,265	16	1,187	38	209	41	1,396	79
Woodville	14	" "	4,921	95	7,162	72	3,897	07	295	48	4,192	55
Williamsburg .	8	" "	2,274	45	2,939	89	431	14	211	27	642	41
Thorndale ...	12	" "	3,045	30	2,722	30	1,127	21	11	74	1,138	94
Toronto Twp. .	12	.....	2,122	66	1,314	54	3,236	18	3,482	49	6,718	67
Total			14,873,347	77	12,982,294	34	2,552,832	50	814,443	67	3,367,276	17

"B"—Continued

for Period ending December 31st, 1915

Revenue	Surplus	Depreciation Charge	Surplus less Depreciation Charge	Number of Consumers				Per Cent of Consumers to Population	H. P. taken in Dec. 1915
				Dom-estic	Com'l	Power	Total		
\$ c.	\$ c.	\$ c.	\$ c.						
2,123 80	86 26	.....	86 26	75	40	.....	115	10.0	37
6,400 06	2,001 12	500 00	1,501 12	114	73	3	190	17.4	138
4,535 25	658 82	465 00	193 82	120	50	1	171	16.3	62
4,257 83	<i>864 69</i>	.....	<i>864 69</i>	131	56	5	192	20.0	56
4,231 21	703 04	300 00	403 04	106	56	2	164	17.4	88
3,798 87	1,284 38	600 00	684 38	141	33	3	177	18.6	62
4,186 40	<i>1,158 65</i>	.....	<i>1,158 65</i>	135	65	6	206	22.5	47
3,105 82	372 70	250 00	122 70	79	35	1	115	12.6	48
889 67	195 90	.....	195 90	108	43	1	152	17.1	44
2,795 81	<i>83 11</i>	.....	<i>83 11</i>	85	49	.....	134	15.2	46
8,426 43	1,410 30	740 00	670 30	274	73	9	356	.....	80
5,046 22	1,571 84	1,000 00	571 84	124	30	7	161	.....	90
2,393 49	882 83	385 00	497 83	78	64	2	144	18.6	30
2,342 70	<i>21 08</i>	.....	<i>21 08</i>	87	39	3	129	17.9	35
6,107 26	1,126 91	300 00	826 91	72	.....	4	76	10.7	177
917 65	220 28	.....	220 28	107	53	.....	160	22.5	45
641 07	159 55	.....	159 55	68	32	.....	100	14.1	29
803 19	<i>46 63</i>	.....	<i>46 63</i>	36	20	1	57	8.1	36
2,303 65	91 44	.....	91 44	59	42	3	104	17.8	99
2,269 46	907 09	425 00	482 09	42	33	2	77	11.8	44
2,398 31	668 00	300 00	368 00	65	10	3	78	12.0	31
2,470 17	431 06	380 00	51 06	66	37	2	105	17.1	40
1,146 12	172 91	.....	172 91	49	15	1	65	10.9	19
856 19	208 74	.....	208 74	39	14	1	54	9.0	23
851 99	69 57	.....	69 57	30	15	.....	45	7.5	12
3,435 48	<i>76 55</i>	.....	<i>76 55</i>	78	59	1	138	23.5	44
2,078 58	<i>607 85</i>	.....	<i>607 85</i>	57	36	.....	93	16.3	23
2,655 37	138 45	.....	138 45	56	20	4	80	14.3	49
6,682 85	1,505 81	420 00	1,085 81	37	12	4	53	10.6	181
1,681 20	<i>1,080 22</i>	.....	<i>1,080 22</i>	13	14	1	28	.....	50
937 73	8 81	.....	8 81	33	33	.....	66	.....	21
1,208 23	80 25	.....	80 25	40	30	1	71	.....	26
448 52	82 39	.....	82 39	22	10	1	33	.....	8
1,262 78	461 30	200 00	261 30	61	18	2	81	.....	17
1,510 85	295 32	250 00	45 32	65	30	.....	95	.....	24
156 44	100 49	.....	100 49	20	12	.....	32	.....	11
1,318 45	<i>218 54</i>	.....	<i>218 54</i>	49	9	1	59	.....	43
1,394 61	<i>129 13</i>	.....	<i>129 13</i>	45	15	1	61	.....	30
1,077 23	50 12	.....	50 12	60	26	.....	86	.....	25
1,948 33	551 54	250 00	301 54	59	26	2	87	.....	19
2,544 89	<i>1,647 66</i>	.....	<i>1,647 66</i>	35	28	3	66	.....	58
698 98	56 57	.....	56 57	44	9	1	54	.....	17
1,509 99	371 05	135 00	236 05	32	20	1	53	.....	36
8,615 27	1,896 60	1,800 00	96 60	188	.....	.....	188	.....	72
4,069,816 83	702,540 66	240,644 04	461,896 62	95,591	21,419	3,818	120828	.....	.....

Note: Figures in italics indicate operating losses or where the surplus was not sufficient to provide the full depreciation charge.

No depreciation is charged against the first years' operation.

Toronto, Hamilton, and Port Arthur figures not finally audited and subject to minor corrections.

Depreciation in Toronto and Port Arthur included in surplus.

STATE

Comparative Detailed Operating Reports of Electric Departments of Hydro

Municipality	Toronto			Ottawa	
Population	470,144			100,785	
—	1913	1914	1915	1913	1914
	a	a	a		
EARNINGS	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.
Domestic Light	190,376 89	289,645 45	331 807 18	68,032 27	68,767 48
Commercial Light	233,799 04	305,534 31	291,907 92	53,438 04	51,769 72
Power	347,708 88	483,681 15	575,239 17	26,978 76	31,748 23
Street Light	344,933 79	364,214 17	350,085 97	49,199 57	50,439 29
Miscellaneous	29,891 21	39,651 98	40,076 70	.....	183 11
Total	1,146,709 81	1,482,727 06	1,589,116 94	197,648 64	202,910 83
EXPENSES					
Power Purchased	255,986 26	323,586 97	430,830 00	50,750 00	55,512 39
Sub-Stn. Operation	32,216 66	42,667 33	42,890 24	3,127 63	3,321 20
“ “ Maint'ce. . .	11,510 69	23,560 14	17,243 40	107 58	300 81
Dist. System, Operation and Maintenance	50,693 34	59,013 81	59,782 15	13,694 44	17,041 58
Line Transformer M't'c'e.	3,396 98	5,218 22	6,768 29	245 82	1,996 40
Meter	1,648 28	3,072 21	3,856 44	1,537 17	2,390 11
Consumers' Premises—Exp.	36,536 64	52,893 31	37,821 37	10,572 43	6,082 30
Street Light Sys., Opera- tion and Maintenance..	45,801 72	48,674 18	63,981 72	15,465 59	15,318 91
Promotion of Business...	60,256 03	71,477 64	54,128 73	1,008 50	1,060 00
Billing and Collecting...	43,581 71	50,028 39	64,825 42	6,417 69	7,481 30
Gen. Office, Sal. and Exp.	85,957 58	125,972 92	93,332 31	6,941 68	9,604 33
Undistributed Expenses .	44,304 25	54,191 98	57,693 43	1,453 47	2,350 91
Int. and Deb. Payments.	274,285 24	325,551 67	362,337 99	30,961 54	38,002 88
Miscellaneous Expenses .	.....	b 4,335 80	b 23,330 01	.....	.....
Total Expenses	946,175 38	1,190,244 57	1,318,821 50	142,283 54	160,463 12
Surplus	200,534 43	292,482 49	270,295 44	55,365 10	42,447 71
Loss .....	.....	.....	.....	.....	.....
Depreciation Charge..	115,236 80	147,181 40	.....	24,000 00	32,650 00
Surp. Less Depr. Chg.	85,297 63	145,301 09	.....	31,365 10	9,797 71

Notes.—

“a” Approximate figures only. Accounts not finally audited

“b” Patriotic Funds contributions.

MENT "C"

Municipalities for the year ending December 31st, 1913, 1914 and 1915

Ottawa	Hamilton			London		
101,785	101,344			56,358		
1915	1913	1914	1915	1913	1914	1915
		a	a			
\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.
67,441 19	34,451 95	74,668 38	92,207 60	41,172 64	57,473 08	57,184 75
46,636 99	25,453 99	35,125 57	34,633 16	39,256 07	47,593 44	43,751 37
32,126 50	47,415 58	70,665 43	84,789 71	79,659 78	130,936 35	148,567 23
56,813 66	2,250 89	51,154 36	86,179 51	28,372 20	30,535 83	31,168 87
225 48	9,841 52	2,564 82	2,621 85	3,763 78	3,313 10	4,958 29
203,243 82	119,413 93	234,178 56	300,431 83	192,224 47	269,851 80	285,630 51
53,018 54	47,307 65	78,968 72	103,922 98	72,676 41	97,404 63	122,893 29
3,989 78	3,240 97	5,741 24	8,819 47	5,816 18	9,925 89	8,671 25
588 81	94 01	653 61	51 80	519 81	767 40	135 79
18,193 82	3,168 21	6,504 84	15,441 58	5,342 67	3,850 78	5,220 69
635 82	1,216 21	505 26	253 57	1,674 88	760 87	94 82
3,444 25	16 39	143 97	484 55	138 23	95 60	372 13
2,534 80	2,693 70	2,782 23	4,061 03	1,827 71	2,119 53	2,455 20
19,712 71	1,375 46	13,380 35	10,394 16	5,278 72	8,511 05	6,303 42
3,118 79	4,391 01	3,999 76	3,438 77	5,833 84	5,840 01	6,902 59
8,915 38	6,270 38	10,825 27	13,832 80	6,738 13	9,126 81	10,762 84
11,699 46	3,623 22	12,894 66	17,068 60	14,180 20	16,845 61	15,042 13
3,671 03	1,289 35	3,407 34	4,992 86	6,297 08	6,687 31	4,943 05
40,365 58	30,201 49	46,398 68	60,946 11	29,488 97	35,127 20	38,493 89
.....	.....	.....	.....	.....	.....	b 2,776 28
169,888 77	104,888 05	186,205 93	243,708 28	155,812 83	197,062 69	225,067 37
33,355 05	14,525 88	47,972 63	56,723 55	36,411 64	72,789 11	60,563 14
.....
33,000 00	9,031 35	21,053 66	25,808 87	21,058 82	27,588 39	32,734 97
355 05	5,494 53	26,918 97	30,914 68	15,352 82	45,200 72	27,828 17

STATEMENT

Comparative Detailed Operating Reports of Electric Departments of Hydro

Municipality	Brantford		Windsor		Peterboro'
Population	26,389		22,993		20,653
—	1914	1915	1914	1915	1914
EARNINGS	e		f		g
	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.
Domestic Light	7,103 77	13,629 36	3,143 41	23,161 57	8,661 71
Commercial Light	5,392 87	10,746 67	1,107 38	12,009 99	7,749 91
Power	647 69	12,901 29	9 77	3,734 81	7,013 23
Street Light	21,724 64	28,691 05	3,997 85	31,947 11	3,081 59
Miscellaneous	627 57	327 94	.....	961 07	.....
Total	35,496 54	66,296 31	8,258 41	71,814 55	26,506 44
EXPENSES					
Power Purchased	12,999 65	24,661 13	4,330 41	38,849 61	11,920 90
Sub-Stn. Operation	1,069 43	2,111 85	408 67	2,588 72	840 05
“ “ Maint'ce... ..	7 84	177 02	.....	236 47	9 08
Dist. System, Operation and Maintenance	376 83	684 06	240 41	629 41	996 31
Line Transformer M't'ce.	65 26	160 65	.....	48 49	26 35
Meter	10 08	199 00	.....	11 70	6 52
Consumers' Premises—Exp.	40	3 53	.....	222 87	.....
Street Light Sys., Operation and Maintenance..	1,460 00	3,420 03	.....	1,667 97	1,465 01
Promotion of Business ..	1,608 37	1,644 50	.....	1,455 58	.....
Billing and Collecting ...	994 63	1,625 66	441 36	2,416 24	242 70
Gen. Office, Sal. and Exp..	1,069 66	1,443 91	2,170 90	3,821 74	3,777 45
Undistributed Expenses ..	215 98	798 48	.....	1,502 25	214 94
Int. and Deb. Payments..	7,444 31	14,686 37	666 66	13,038 53	2,026 21
Miscellaneous Expenses ..	.....	.....	.....	.....	.....
Total Expenses	27,322 44	81,616 19	8,258 41	66,489 68	21,525 52
Surplus	8,174 10	14,680 12	.....	5,324 87	4,980 92
Loss .....	.....	.....	.....	.....	.....
Depreciation Charge ..	6,000 00	10,000 00	.....	.....	.....
Surp. Less Depr. Chg.	2,174 10	4,680 12	.....	.....	4,980 92

Notes —

- “e” 9 months' operation
 “f” 4 months' operation
 “g” 3 months' operation

"C"—Continued

Municipalities for the year ending December 31st, 1913, 1914 and 1915

Peterboro' 20,653	Berlin 19,056			Port Arthur 18,224		
1915	1913	1914	1915	1913	1914	1915
	k					a
\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.
27,991 24	16,558 82	17,757 08	19,108 60	81,830 66	38,097 65	32,048.37
27,563 41	20,985 35	19,549 45	16,807 15	^h 78,193 51	32,933 91	28,662.58
30,185 83	38,368 34	49,173 17	54,732 50	14,709 41	92,804 49	85,060.78
12,294 64	17,373 81	16,544 11	17,017 43		15,458 88	16,726.46
.....	1,268 87	1,726 92	2,714 76	.....	.....	.....
98,035 12	94,555 19	104,750 73	110,380 44	174,733 58	179,294 93	162,498.19
.....
45,240 12	33,359 47	40,275 75	47,644 33	43,664 83	53,412 42	53,007.40
3,269 50	4,892 72	4,282 95	3,727 21	3,652 53	3,268 30	4,176.60
313 85	1,175 64	294 68	465 16	2,140 94	4,323 79	3,132.45
4,632 71	1,575 15	4,411 10	4,193 45	9,013 80	8,003 88	6,713.84
178 43	205 39	20 35	21 76	1 75	454 62	755.08
1,326 47	326 51	564 97	384 57	112 13	670 91	.....
.....	101 97	75 83	127 92	322 64	945 31	239.00
6,000 91	2,803 88	3,884 76	1,699 89	1,543 03	2,146 96	1,764.92
.....	452 28	630 50	169 29	361 85	100 85	416.67
2,125 05	1,901 40	2,259 54	2,569 37	2,630 19	5,324 25	3,271.97
9,542 34	2,532 25	2,615 07	2,686 19	2,613 61	2,557 42	6,777.52
821 47	1,966 04	1,966 38	2,427 57	2,012 67	2,357 63	1,811.07
13,372 97	17,897 45	18,719 43	18,436 93	37,556 73	40,489 67	46,493.09
.....	.....	^b 619 00	^b 1,265 63	.....	.....	.....
86,823 82	69,190 15	80,620 31	85,819 27	105,626 70	124,056 01	128,559.61
11,211 30	25,365 04	24,130 42	24,561 17	69,106 88	55,238 92	33,938.58
.....
7,500 00	10,980 79	12,884 05	13,500 00	13,647 55	16,469 79	.....
3,711 30	14,384 25	11,246 37	11,061 17	55,459 33	38,769 13	.....
.....

"k" 13 months' operation

"b" Patriotic Funds contributions.

"a" Approximate figures only.

STATEMENT

Comparative Detailed Operating Reports of Electric Departments of Hydro

Municipality	St.Catharines		Stratford		
Population	17,296		17,006		
—	1914	1915	1913	1914	1915
EARNINGS	g				
	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.
Domestic Light	2,013 49	9,540 70	11,636 59	15,180 91	16,967 58
Commercial Light	412 75	3,810 11	17,033 98	16,336 30	14,766 75
Power	12,742 98	25,193 30	15,123 78	16,519 24	15,415 78
Street Light	944 63	11,579 42	12,120 00	12,120 00	15,466 32
Miscellaneous	44 28	522 83	69 33	1,319 04	1,449 46
Total	16,158 13	50,646 36	55,983 68	61,475 49	64,065 89
EXPENSES					
Power Purchased	9,328 14	19,191 12	22,028 75	25,875 69	31,081 79
Sub-Stn. Operation	579 90	1,617 35	1,651 06	1,557 16	1,752 93
“ “ Maint'ce... ..	46 19	237 97	200 54	16 70	71 99
Dist. System, Operation and Maintenance	249 06	2,069 73	1,630 72	2,515 22	1,985 74
Line Transformer M't'ce..	640 56	242 25	148 48	1 56	44 37
Meter	152 97	254 38	261 33	37 34	153 44
Consumers' Premises—Exp.	.....	.....	501 90	.....	.....
Street Light Sys., Opera- tion and Maintenance..	443 16	1,281 13	1,509 91	926 11	1,627 04
Promotion of Business ..	981 77	1,459 99	.....	62 45	15 37
Billing and Collecting ...	107 00	984 37	1,325 47	1,647 47	2,007 92
Gen. Office, Sal. and Exp..	607 53	4,213 82	2,339 27	1,918 44	1,900 16
Undistributed Expenses ..	.....	250 93	211 15	1,211 78	1,934 03
Int. and Deb. Payments..	1,105 87	9,724 03	10,536 75	12,989 75	14,398 80
Miscellaneous Expenses ..	.....	.....	.....	b 1,750 00	b 3 752 52
Total Expenses	14,242 15	41,527 07	42,345 33	50,724 89	60,726 10
Surplus	1,915 98	9,119 29	13,638 35	10,750 60	3,339 79
Loss .....	.....	.....	.....	.....	.....
Depreciation Charge .	850 00	7,250 00	3,420 00	4,631 50	5,250 00
Surp. Less Depr. Chg.	1,065 98	1,869 29	10,218 35	6,119 10	1,910 20

Italics denote losses.

“g” 3 months' operation.

“b” Patriotic Funds contributions.

“ C ”—Continued

Municipalities for the years ending December 31st, 1913, 1914 and 1915

Guelph 16,799			St. Thomas 16,794			Chatham 12,714
1913	1914	1915	1913	1914	1915	1915
						o
\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.
11,528 09	16,920 54	15,514 10	11,125 50	13,221 00	16,517 37	5,581 54
15,075 61	15,923 51	12,692 86	16,097 41	13,480 75	13,422 48	2,806 81
42,091 34	38,148 46	38,404 28	36,550 23	44,247 13	44,780 45	449 70
9,500 04	9,590 66	9,298 95	10,989 22	11,025 36	14,199 64	7,616 36
2,531 74	1,516 42	1,947 98	361 15	869 76	984 54	.....
80,726 82	82,099 59	77,858 17	75,124 04	82,844 00	89,904 48	16,454 41
32,473 66	30,460 41	37,292 12	31,435 85	38,279 18	44,655 44	7,171 72
1,700 14	540 50	1,254 90	2,452 25	2,571 06	2,567 38	318 56
1,076 44	733 05	1,468 03	913 99	80 40	107 33	23 48
3,004 51	3,897 65	1,592 39	1,580 22	2,989 04	5,392 80	102 09
179 90	161 05	240 75	47 57	77 64	154 75	15 25
585 91	711 63	756 35	53 40	183 34	170 35	45 94
206 39	.....	.....	.....	.....	.....	.....
1,566 58	1,380 19	1,343 16	2,405 21	3,023 53	2,454 54	396 40
.....	.....	.....	.....	.....	1,224 10	326 00
430 35	2,257 35	2,695 89	339 43	1,604 98	1,393 43	810 65
3,424 77	3,003 77	3,710 93	1,593 77	2,733 80	3,037 32	1,630 14
1,730 98	2,351 61	2,943 66	739 67	967 72	2,248 54	871 85
10,273 27	10,273 27	10,273 28	7,402 65	7,406 14	8,359 74	5,463 85
d 884 95	d 834 02	d 976 72	.....	.....	.....	.....
57,567 85	56,604 50	64,548 18	48,964 01	59,916 83	71,765 72	17,175 88
23,158 97	25,495 09	13,309 99	26,160 03	22,927 17	18,138 76	.....
.....	.....	.....	.....	.....	.....	721 47
8,000 00	10,200 00	10,500 00	6,900 00	7,350 00	8,735 00	.....
15,158 97	15,295 09	2,809 99	19,260 03	15,577 17	9,403 76	.....

“ o ” 10 months' operation.
“ d ” Motor repairs.

STATEMENT

Comparative Detailed Operating Reports of Electric Departments of

Municipality Population	Galt 12,060			Woodstock 10,265		
	1913	1914	1915	1913	1914	1915
EARNINGS						
	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.
Domestic Light	10,535 38	15,797 16	17,024 42	6,495 02	8,807 40	10,472 14
Commercial Light	11,648 49	11,952 75	8,794 36	12,942 32	11,610 14	11,718 95
Power	16,575 61	23,826 87	30,547 84	20,262 52	19,832 26	20,742 18
Street Light	6,280 25	8,500 00	12,981 29	7,160 00	7,320 00	7,810 08
Miscellaneous	194 00	919 15	373 24	354 18	471 80	673 97
Total	45,233 73	60,995 93	69,721 15	47,214 04	48,041 50	51,417 32
EXPENSES						
Power Purchased	17,883 91	21,134 48	29,961 84	18,798 66	18,690 30	20,217 74
Sub-Stn. Operation	1,761 14	1,930 93	2,283 95	1,834 83	2,149 53	1,817 22
“ “ Maint'ce...	180 76	99 42	280 66	497 39	83 02	108 46
Dist. System, Operation and Maintenance	446 24	1,729 80	1,499 76	1,827 65	1,566 91	1,654 10
Line Transformer M't'c'e.	11 48	129 05	120 76	4 84	23 75	74 94
Meter	2 00	91 88	57 81	70 75	57 05	24 82
Consumers' Premises-Exp.		208 64		345 00		
Street Light Sys., Opera- tion and Maintenance..	296 88	2,234 06	3,066 10	1,142 30	1,665 72	584 03
Promotion of Business ..						
Billing and Collecting ...	1,188 20	1,868 30	2,226 16	1,115 75	1,628 44	1,443 25
Gen. Office, Sal. and Exp..	1,792 40	1,618 71	2,713 64	2,513 73	3,050 10	3,007 93
Undistributed Expenses ..		187 55	475 21	447 96	581 45	972 96
Int. and Deb. Payments..	9,721 64	10,337 35	13,269 15	6,853 83	7,219 04	7,290 95
Miscellaneous Expenses ..				b 500 00		b1,000 00
Total Expenses	33,284 65	41,570 20	55,955 04	35,806 87	37,215 31	38,196 40
Surplus	11,949 08	19,425 73	13,766 11	11,407 17	10,826 38	13,220 92
Loss						
Depreciation Charge .	8,400 00	10,600 00	10,000 00	5,827 40	6,450 00	6,725 00
Surp. Less Depr. Chg.	3,549 08	8,825 73	3,766 11	5,579 77	4,376 38	6,495 92

Note —

“b” Contribution to Patriotic Fund

"C"—Continued

Hydro Municipalities for the years ending December 31st, 1913, 1914, and 1915

Welland 7,243			Barrie 7,088			Midland 6,375		
1913	1914	1915	1913	1914	1915	1913	1914	1915
f								
\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.
1,369 67	4,411 20	4,643 16	10,071 55	11,149 49	11,087 68	6,095 11	6,941 07	6,580 45
558 46	1,676 38	1,600 79	9,252 70	9,464 64	9,572 91	6,104 16	5,048 06	4,462 54
4,307 21	8,305 71	38,541 88	3,393 45	3,712 24	4,567 76	5,700 22	6,484 43	10,229 52
1,395 00	5,049 00	5,235 75	4,292 53	4,572 75	5,075 00	3,463 07	3,728 76	3,100 00
.....	.....	865 65	583 28	137 89	145 51	.....	13 71	33 26
7,630 34	19,442 29	50,887 23	27,593 51	29,037 01	30,448 86	21,362 56	22,216 03	24,405 77
4,861 38	7,598 77	28,168 78	6,611 27	10,873 86	12,352 71	6,059 33	6,539 10	8,367 74
295 43	406 99	208 78	5,706 97	2,745 68	2,428 00	.....	.....	.....
.....	32 30	96 66	.....	.....	.....	.....	.....	.....
191 18	138 94	590 33	679 16	448 87	1,008 10	989 11	1,284 29	1,104 58
32 82	107 53	318 22	.....	.....	58 50	57 20	420 06	122 60
50	57 21	200 13	17 92	.....	151 73	.....	.....	.....
.....
123 82	446 23	192 52	402 06	108 02	675 44	526 53	1,020 22	1,020 86
.....
317 42	748 38	455 39	.....	.....	.....	221 04	157 39	282 69
798 53	2,790 59	3,720 01	3,578 67	2,294 92	2,567 43	1,435 86	1,692 75	2,088 31
39 45	10 25	420 97	544 58	510 67	1,174 97	.....	107 63	.....
2,638 54	5,080 20	8,660 08	5,590 40	6,052 29	6,052 29	4,134 55	4,267 05	3,827 60
9,299 07	17,417 39	43,031 87	23,131 03	23,044 31	26,469 17	13,423 62	15,488 49	16,814 39
.....	2,024 90	7,855 36	4,462 48	5,992 70	3,979 69	7,938 94	6,727 54	7,591 39
1,668 73	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	4,425 00	3,350 00	3,500 00	3,500 00	2,950 00	3,200 00	3,400 00
.....	2,024 90	3,430 36	1,112 48	2,492 70	479 69	4,988 94	3,527 54	4,191 39

Note—

"f" 4 months' operation

STATEMENT

Comparative Detailed Operating Reports of Electric Departments of

Municipality	Collingwood			Ingersoll	
Population	6,361			5,200	
—	1913	1914	1915	1913	1914
EARNINGS					
	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.
Domestic Light	8,775 83	7,857 86	7,094 27	3,595 03	5,085 82
Commercial Light	7,600 00	7,555 54	5,688 26	6,048 51	6,359 72
Power	896 72	5,165 39	9,527 70	15,293 44	12,818 27
Street Light	3,802 88	4,647 00	4,715 00	4,262 02	3,960 04
Miscellaneous	106 21	.....	.....	976 99	250 88
Total	21,181 64	25,225 79	27,025 23	30,176 00	28,474 73
EXPENSES					
Power Purchased	7,480 48	10,450 24	13,733 50	11,966 61	11,441 79
Sub-Stn. Operat'on	1,952 60	2 25	.....	828 83	907 02
“ “ Maint'ce....	.....	10 51	3 97	.....	.....
Dist. System, Operation and Maintenance	1,374 21	749 16	530 27	422 13	535 79
Line Transformer M't'c'e.	9 19	36 83	.....	187 39	113 54
Meter	13 37	15 25	.....	97 00	360 05
Consumers' Premises—Exp. Street Light Sys., Operation and Maintenance..	133 20	664 19	477 36	440 09	274 54
Promotion of Business ..	.....	.....	.....	.....	.....
Billing and Collecting ...	252 08	302 39	526 63	560 15	543 73
Gen. Office, Sal. and Exp..	2,066 94	1,916 97	1,988 80	1,615 40	1,471 88
Undistributed Expenses ..	209 90	173 18	128 76	195 56	71 63
Int. and Deb. Payments..	4,277 77	4,369 96	3,556 84	5,337 25	5,198 90
Miscellaneous Expenses ..	.....	.....	b 250 00	.....	.....
Total Expenses	17,769 94	18,690 93	21,196 13	21,650 41	20,918 87
Surplus	3,411 70	3,534 86	5,829 10	8,525 59	7,555 86
Loss .....	.....	.....	.....	.....	.....
Depreciation Charge ..	2,390 00	2,400 00	2,600 00	2,862 00	3,168 00
Surp. Less Depr. Chg.	1,021 70	4,134 86	3,229 10	5,663 59	4,387 86

“b” Patriotic Funds contributions.

"C"—Continued

Hydro Municipalities for the year ending December 31st, 1913, 1914 and 1915

Ingersoll	Preston			Waterloo		
5,200	4,942			4,908		
1915	1913	1914	1915	1913	1914	1915
				k		
\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.
5,480 52	5,477 10	6,520 39	6,615 91	4,263 66	4,723 94	5,401 82
5,716 91	5,366 77	5,011 15	4,488 76	5,098 42	4,825 22	5,284 87
16,251 18	21,017 68	21,975 26	21,698 34	14,970 14	13,282 12	15,125 32
3,564 80	2,594 55	2,778 48	2,830 50	5,294 10	5,137 84	5,773 20
610 56	232 47	98 53	15 00	477 61		276 14
31,623 97	34,688 57	36,383 81	35,648 51	29,626 32	28,446 7	31,861 35
16,994 84	16,673 20	17,460 00	18,843 12	11,075 53	9,882 03	14,230 85
852 02	1,459 16	1,509 01	1,667 38	1,019 10	924 41	863 04
.....	49 21	28 33	30 10	81 00	182 23	315 50
446 05	1,238 36	2,368 26	1,656 67	378 74	794 51	2,013 65
277 77	280 22	139 99	149 14	32 13	42 90	2 65
297 19	79 67	86 01	56 28	54 67	193 53	61 72
214 69	431 92	523 05	413 40	1,093 25	459 21	869 98
668 26	656 75	739 90	822 42	866 90	756 25	926 41
1,561 32	415 98	568 69	496 56	2,520 00	2,519 64	2,463 40
82 63	183 85	585 82	1,340 06	709 44	323 72	431 95
5,046 35	4,120 54	7,300 84	7,212 87	3,676 92	3,473 33	4,284 71
26,441 12	25,588 86	31,309 90	32,688 00	21,507 68	19,551 76	26,463 86
5,182 85	9,099 71	5,073 91	2,960 51	8,118 64	8,894 97	5,397 47
3,200 00	2,924 00	3,400 00	3,800 00	3,100 00	3,500 00	4,000 00
1,982 85	6,175 71	1,673.91	839 49	5,018 64	5,394 97	1,397 49

Italics denote losses.

STATEMENT

Comparative Detailed Operating Reports of Electric Departments of

Municipality Population	Dundas 4,687			Goderich 4,676		Walker- ville 4,565
—	1913	1914	1915	1914	1915	1914
EARNINGS						
	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.
Domestic Light	3,045 85	5,349 24	6,139 97	7,197 05	6,072 51	3,37 96
Commercial Light	4,193 27	4,198 64	4,310 96	4,196 49	5,066 76	1,492 84
Power	3,070 40	4,305 96	5,930 54	1,240 73	5,645 26	6,042 11
Street Light	60 10	3,050 85	3,460 35	5,525 00	5,525 00	1,716 61
Miscellaneous	930 81					
Total	11,300 43	16,904 69	19,841 82	18,159 27	22,309 53	12,289 52
EXPENSES						
Power Purchased	3,474 08	4,038 10	4,981 97	6,315 17	7,716 02	6,104 53
Sub-Stn. Operation			71 64	1,806 40	1,705 39	259 76
“ Maint'ce.						1 75
Dist. System, Operation and Maintenance	154 77	840 00	1,448 70	167 83	312 13	502 81
Line Transformer M't'c'e.	35 80	74 75	91 00	11 25	113 65	3 00
Meter	4 40	31 18	61 42	15 94	13 43	13 25
Consumers' Premises—Exp. Street Light Sys., Opera- tion and Maintenance		84 68	28 54			
Promotion of Business		285 34	378 76	68 20	413 67	10 58
Billing and Collecting ...		789 93				
Gen. Office, Sal. and Exp..	689 51	937 59	1,026 26	343 13	405 95	562 05
Undistributed Expenses ..	1,642 56	1,876 50	1,905 51	204 85	185 28	1,499 11
Int. and Deb. Payments..		138 32	898 42	154 40	113 35	374 34
	1,970 14	4,504 12	5,706 69	4,182 09	4,447 27	1,908 19
Total Expenses	7,971 26	13,600 51	16,598 91	13,269 26	15,426 14	11,239 37
Surplus	3,329 17	3,304 18	3,242 91	4,890 01	6,883 39	1,050 15
Loss						
Depreciation Charge .	1,508 00	1,675 00	2,900 00	2,920 00	3,750 00	
Surp. Less Depr. Chg.	1,821 17	1,629 18	342 91	1,970 01	3,133 39	1,550 15

"C"—Continued

Hydro Municipalities for the year ending December 31st, 1913, 1914 and 1915

Walkerville 4,565	Paris 4,383		Simcoe 4,160	Brampton 4,160		
1915	1914	1915	1915	1913	1914	1915
			e			
\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.
13,036 98	4,766 23	5,071 54	351 67	5,617 61	6,798 89	6,860 48
7,836 93	2,778 00	4,063 03	1,386 89	3,983 65	4,055 99	4,053 56
39,523 81	1,419 90	6,328 33	766 42	10,557 72	10,658 33	11,624 83
3,601 29	4,103 00	4,576 00	2,708 51	3,500 00	4,200 00	4,486 00
982 28	.....	.....	12 80	.....	.....	62 71
64,981 29	13,067 22	20,937 90	5,226 29	23,661 98	25,713 21	27,087 58
41,885 12	4,020 80	7,104 77	2,438 62	11,084 34	11,692 39	13,259 58
1,425 79	1,082 57	1,647 07	.....	26 11	58 58	30 95
39 86	.....	.....	.....	.....	.....	.....
1,132 37	1,299 26	1,325 58	3 70	231 54	522 54	1,032 33
163 19	13 45	20 00	.....	16 00	197 15	150 45
217 05	.....	2 05	.....	.....	51 31	13 15
749 88	333 09	493 88	19 81	168 79	429 60	282 72
2,039 70	.....	.....	.....	341 70	794 57	871 46
2,806 63	563 26	746 78	441 53	1,694 67	1,904 94	1,854 65
923 24	115 30	100 00	232 50	371 28	66 47	28 12
7,956 95	5,849 94	7,966 15	.....	3,781 42	4,936 36	4,799 34
59,339 78	13,277 67	19,406 28	3,136 16	17,716 05	20,653 91	22,322 75
5,641 51	.....	632 62	2,090 13	5,945 93	5,059 30	4,764 83
.....	210 45	.....	.....	.....	.....	.....
.....	.....	.....	.....	2,500 00	3,000 00	3,000 00
.....	.....	.....	.....	3,445 93	2,059 30	1,764 83

Notes—

"e" 9 months' operation.

STATEMENT

Comparative Detailed Operating Reports of Electric Departments of Hydro

Municipality	Penetanguishene			Wallaceburg	St. Mary's
Population	4,107			4,107	3,960
—	1913	1914	1915	1915	1913
EARNINGS				y	
	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.
Domestic Light	1,989 80	1,936 73	2,050 69	4,079 74	3,815 77
Commercial Light	4,511 16	3,064 83	2,676 60	4,239 30	4,553 73
Power	8,775 95	8,001 69	10,048 08	87 32	8,221 72
Street Light	2,042 00	2,016 00	2,095 00	2,680 61	3,582 00
Miscellaneous			148 35		
Total	17,318 91	15,019 25	17,018 72	11,086 97	20,173 22
EXPENSES					
Power Purchased	6,347 56	7,673 95	9,935 27	5,601 51	10,055 82
Sub-Stn. Operation	967 84	725 24	734 23		728 39
“ “ Maint'ce... ..		3 25	1 66		150 46
Dist. System, Operation and Maintenance	301 41	166 21	92 25	143 88	556 05
Line Transformer M't'ce.	236 11	93 51	1 00		519 39
Meter		178 86	27 60		202 56
Consumers' Premises—Exp.					
Street Light Sys., Operation and Maintenance..	144 56	335 99	373 93	295 13	554 36
Promotion of Business ..		131 74	58 88		
Billing and Collecting ...	44 45	133 00	227 56		263 21
Gen. Office, Sal. and Exp..	1,278 02	1,305 25	1,303 05	1,377 06	1,077 38
Undistributed Expenses ..		3 00			75 63
Int. and Deb. Payments..	2,035 90	1,986 09	1,981 39	3,580 84	4,616 15
Total Expenses	11,355 85	12,736 09	14,736 82	10,998 42	18,799 40
Surplus	5,963 06	2,283 16	2,281 90	88 85	1,373 82
Loss					
Depreciation Charge ..	1,820 00	1,960 00	2,000 00		
Surp. Less Depr. Chg.	4,143 06	323 16	281 90		1,373 82

“y” 11 months' operation.

“C”—Continued

Municipalities for the years ending December 31st, 1913, 1914 and 1915

St. Mary's 3,960		Tillsonburg 3,050			Strathroy 2,988
1914	1915	1914		1915	1915
\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.
4,614 95	5,073 97	2,796 57	3,367 74	3,203 51	3,380 78
4,733 33	4,222 53	4,677 38	4,579 37	4,236 42	4,701 76
10,610 05	8,379 87	4,763 13	6,303 09	5,619 15	700 49
3,441 00	3,850 00	2,601 00	2,463 96	2,507 81	4,221 76
.....	178 00	1,163 11	863 28	667 61	.....
23,399 33	21,704 37	16,001 19	17,577 44	16,234 50	13,004 79
8,966 67	8,165 01	6,249 35	6,999 79	7,248 93	5,541 40
803 25	729 98	950 05	753 91	713 91	.....
195 00	.....	.....	.....	.....	.....
400 29	582 11	332 50	570 90	471 99	78 62
350 34	136 96	4 89	11 55	.....	.....
175 22	102 77	.....	16 47	4 40	.....
.....
423 60	502 85	205 87	210 50	309 17	160 10
.....	.....	.....	.....	43 29	.....
257 03	296 57	907 04	923 46	1,003 63	.....
994 13	1,143 40	1,064 21	997 04	1,306 50	1,353 44
138 54	72 80	1,033 61	1,000 00	.....	.....
4,658 00	4,775 42	2,137 07	2,727 41	2,674 75	2,719 74
17,362 07	16,507 87	12,884 59	14,211 21	13,776 57	9,853 30
6,037 26	5,196 50	3,116 60	3,366 23	2,457 93	3,151 49
.....
3,340 00	3,600 00	1,782 75	1,830 00	1,875 00	1,500 00
2,697 26	1,596 50	1,333 85	1,536 23	582 93	1,651 49

STATEMENT

Comparative Detailed Operating Reports of Electric Departments of Hydro

Municipality	Prescott		Hespeler		
Population	2,919		2,634		
—	1914	1915	1913	1914	1915
EARNINGS					
Domestic Light	\$ 7,472 75 c.	\$ 4,058 14 c.	\$ 2,206 75 c.	\$ 2,635 41 c.	\$ 2,787 48 c.
Commercial Light	996 00	3,033 62	1,667 00	1,934 75	2,334 15
Power	1,099 27	3,431 45	5,044 30	6,116 27	9,017 58
Street Light	2,500 00	2,500 00	1,500 00	1,478 00	1,536 00
Miscellaneous	9 00				
Total	12,077 02	13,023 21	10,418 05	12,164 43	15,675 21
EXPENSES					
Power Purchased	5,047 30	4,552 99	5,465 01	4,753 26	6,663 89
Sub-Stn. Operation	3,293 49	1,147 65	2,101 87	614 43	413 06
“ “ Maint'ce.	361 49	805 14			
Dist. System, Operation and Maintenance	767 49	929 36	638 83	565 16	431 37
Line Transformer M't'c'e.		34 00	4 17	54 05	52 76
Meter	116 10	146 70			
Consumers' Premises-Exp.					
Street Light Sys., Operation and Maintenance ..	119 00	210 22	57 50	111 92	139 02
Promotion of Business ..					
Billing and Collecting ...	37 82	81 94			
Gen. Office, Sal. and Exp. ..	1,165 23	1,503 78	735 23	1,207 23	481 99
Undistributed Expenses ..	169 62	260 23	272 67	112 50	112 50
Int. and Deb. Payments..	1,722 31	2,233 12	2,140 19	3,144 33	3,144 33
Total Expenses	12,799 85	11,905 13	11,415 47	10,562 88	12,438 82
Surplus		1,118 08		1,601 55	3,236 29
Loss	700 06		997 42		
Depreciation Charge .	1,950 00	2,000 00		1,350 00	1,750 00
Surp. Less Depr. Chg.	2,650 06	881 92		251 55	1,486 29

Italics denote losses.

"C"—Continued

Municipalities for the year ending December 31st, 1913, 1914 and 1915

Elmira 2,200		Weston 2,186			Clinton 2,115	
1914	1915	1913	1914	1915	1914	1915
k						
\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.
1,968 41	2,059 11	4,117 20	3,741 84	4,407 36	2,023 70	2,930 57
2,020 81	1,674 44	1,475 74	1,599 97	1,305 90	2,028 08	3,068 63
1,876 49	2,801 33	6,170 36	4,958 59	4,798 33	1,255 33	2,108 24
1,680 00	1,680 00	2,052 00	3,067 50	2,684 67	1,105 66	1,630 40
.....	3 75	24 88	.....	31 79	.....	118 31
7,545 71	8,218 63	13,840 18	13,367 90	14,228 05	6,412 77	9,856 15
3,077 56	3,361 63	5,159 49	5,783 87	5,536 71	2,291 20	3,835 94
.....	.....	.....	.....	.....	911 74	911 51
.....	.....	791 77	662 71	1,181 11	80 99	146 80
.....
102 55	83 64	574 25	451 99	419 20	145 74	298 61
.....
1,170 47	1,090 84	927 35	1,668 62	1,264 78	1,182 42	1,569 57
31 17	.....	79 50	76 17	.....	32 29	.....
1,425 22	1,356 67	1,588 48	1,588 42	2,352 32	1,838 56	2,643 15
5,806 97	5,892 78	9,120 84	10,231 78	10,754 12	6,483 14	9,405 58
1,738 74	2,325 85	4,719 34	3,136 12	3,473 93	.....	450 57
.....	.....	.....	.....	.....	70 37	.....
650 00	750 00	1,390 00	1,450 00	1,520 00	.....	380 20
1,088 74	1,575 85	3,329 34	1,686 12	1,953 93	.....	70 37

"k" 13 months' operation.

STATEMENT

Comparative Detailed Operating Reports of Electric Departments of Hydro

Municipality	Georgetown			Mimico	
Population	2,002			1,965	
—	1913	1914	1915	1913	1914
EARNINGS	f				
	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.
Domestic Light	661 49	3,069 02	2,999 83	2,021 06	5,085 16
Commercial Light	842 87	2,362 33	2,276 41	h	h
Power	234 32	2,976 61	8,734 01	795 49	963 64
Street Light	541 67	1,843 67	1,834 03	987 00	1,049 34
Miscellaneous			130 53		
Total	2,280 35	10,251 63	15,974 81	3,803 55	7,098 14
EXPENSES					
Power Purchased	759 00	4,183 72	8,893 20	1,740 66	2,801 90
Sub-Stn. Operation					
“ “ Maint'ce.					
Dist. System, Operation and Maintenance	12 85	192 11	137 03	144 79	53 29
Line Transformer M't'ce.					
Meter					
Consumers' Premises—Exp.					
Street Light Sys., Operation and Maintenance..	201 06	128 09	192 12	23 89	88 85
Promotion of Business ..					
Billing and Collecting ..					
Gen. Office, Sal. and Exp.		895 46	955 08	265 61	674 73
Undistributed Expenses ..					
Int. and Deb. Payments..		1,466 55	1,929 67	845 02	1,561 45
Total Expenses	972 91	6,865 93	12,107 10	3,019 97	5,180 22
Surplus	1,307 44	3,385 70	3,867 71	783 58	1,917 92
Loss					
Depreciation Charge .	300 00	850 00	1,280 00	740 00	920 00
Surp. Less Depr. Chg.	1,007 44	2,535 70	2,587 71	43 58	997 92

“ f ” 4 months' operation.

"C"—Continued

Municipalities for the year ending December 31st, 1913, 1914 and 1915

Mimico 1,965	Milton 1,942			Seaforth 1,901		
1915	1913	1914	1915	1913	1914	1915
\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.
5,748 44	1,149 28	1,961 22	1,981 80	2,124 18	2,467 39	2,593 70
346 49	1,212 26	2,226 80	1,900 98	2,876 47	2,581 30	2,724 84
1,042 11	6,462 38	11,325 61	5,364 29	7,509 99	7,707 01	7,685 52
2,015 66	900 00	1,350 00	1,575 00	1,815 81	1,869 96	1,869 96
.....	143 18	455 62	.....	61 63	110 14	143 53
9,152 70	9,867 10	17,319 25	10,822 07	14,388 08	14,735 77	15,017 55
3,342 50	4,902 34	7,696 45	6,511 50	7,931 55	8,646 18	9,305 22
167 16	167 82	609 66	513 70	1,573 93	1,078 00	891 49
148 80	.....	86 16	169 82	317 37	638 57	314 55
892 39	42 27	572 05	819 70	368 67	529 05	548 30
1,790 57	1,582 93	2,277 04	2,270 34	1,653 65	1,704 25	1,662 37
6,341 42	6,695 36	11,241 36	10,285 06	11,845 17	12,596 05	12,721 93
2,811 28	3,171 74	6,077 89	537 01	2,542 91	2,139 72	2,295 62
1,200 00	900 00	1,250 00	1,090 00	1,300 00	1,465 00	1,450 00
1,611 28	2,271 74	4,827 89	552 99	1,242 91	739 72	845 62

Italics denote losses.

STATEMENT

Comparative Detailed Operating Reports of Electric Departments of Hydro

Municipality Population	Acton 1,803			Tilbury 1,726
—	1913	1914	1915	1915
EARNINGS				s
	\$ c.	\$ c.	\$ c.	\$ c.
Domestic Light	1,236 50	1,463 72	1,931 11	979 57
Commercial Light	1,567 48	1,496 18	1,725 73	1,476 53
Power	318 77	836 13	1,019 27	.....
Street Light	1,000 00	1,563 00	1,555 00	715 00
Miscellaneous	286 72	83 60	188 76	19 39
Total	4,409 47	5,442 63	6,419 87	3,190 49
EXPENSES				
Power Purchased	1,801 50	2,344 50	2,495 70	1,601 33
Sub-Stn. Operation .....	.....	.....	.....	.....
“ “ Maint'ce... ..	.....	.....	.....	.....
Dist. System, Operation and Maintenance	371 97	35 42	78 52	.....
Line Transformer M't'ce. Meter .....	.....	.....	.....	.....
Consumers' Premises—Exp. Street Light Sys., Opera- tion and Maintenance..	7 20	147 12	144 16	10 60
Promotion of Business ..	.....	.....	.....	.....
Billing and Collecting ...	.....	.....	.....	.....
Gen. Office, Sal. and Exp..	841 70	943 77	667 70	643 64
Undistributed Expenses ..	.....	.....	.....	.....
Int. and Deb. Payments..	442 00	1,124 06	1,124 06	668 57
Total Expenses	3,584 37	4,594 87	4,510 14	2,924 14
Surplus	825 10	847 76	1,909 73	266 35
Loss .....	.....	.....	.....	.....
Depreciation Charge .	500 00	500 00	500 00	.....
Surp. Less Depr. Chg.	325 10	347 76	1,409 73	.....

“ s ” 8 months' operation.

“ C ”—Continued

Municipalities for the year ending December 31st, 1913, 1914 and 1915

Mitchell 1,706			New Hamburg 1,612			Fergus 1,605
1913	1914	1915	1913	1914	1915	1915
						k
\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.
2,424 59	2,470 29	2,379 58	1,589 21	1,779 90	1,888 04	1,314 03
2,813 92	2,712 55	2,684 01	1,890 72	1,403 56	1,273 38	2,367 91
6,160 53	3,944 91	2,165 68	5,792 20	5,209 51	2,825 57	882 24
1,675 00	1,950 00	2,100 00	1,827 00	1,827 00	1,827 00	1,744 75
385 50	443 90	63 20	325 44	.....	351 77	99 65
13,459 54	11,521 65	9,392 47	11,424 57	10,219 97	8,165 76	6,408 58
6,858 86	4,882 39	4,424 38	5,206 00	4,770 26	3,144 80	2,598 37
12 35	.....	.....	.....	.....	.....	.....
81 25	66 52	486 96	323 40	380 19	469 01	23 77
.....
44 64	34 12	26 10	.....	.....	177 00	97 28
.....
1,223 80	1,315 10	1,258 61	1,194 68	995 47	1,055 70	1,208 84
100 00	.....	.....	.....	107 21	.....	.....
2,224 07	2,224 06	2,124 46	1,170 92	1,172 91	1,303 57	967 76
10,544 97	8,522 19	8,320 51	7,895 00	7,426 04	6,150 08	4,896 01
2,914 57	2,999 46	1,071 96	3,529 57	2,793 93	2,015 68	1,512 57
.....
1,150 00	1,200 00	1,000 00	900 00	900 00	900 00	650 00
1,764 57	1,799 46	71 96	2,629 57	1,893 93	1,115 68	862 57

“ k ” 13 months' operation.

STATEMENT

Comparative Detailed Operating Reports of Electric Departments of Hydro

Municipality	Dresden		Port Dalhousie			Norwich	
Population	1,444		1,318			1,301	
—	1915		1913	1914	1915	1913	1914
EARNINGS	s		m				
	\$	c.	\$	c.	\$	\$	\$
Domestic Light	1,093	68	3,742	54	3,656	1,926	2,168
Commercial Light	1,223	25	h	h	3,608	1,162	995
Power			347	28	429	1,978	1,893
Street Light	1,100	00	1,246	67	880	1,285	1,197
Miscellaneous	153	51			968	46	746
Total	3,570	44	5,336	49	4,965	6,400	7,000
EXPENSES							
Power Purchased	1,917	34	2,393	00	2,407	3,176	2,849
Sub-Stn. Operation					20	24	30
“ “ Maint'ce.							
Dist. System, Operation	25	82					
and Maintenance			253	81	421	178	464
Line Transformer M't'ce.					52	90	80
Meter							13
Consumers' Premises-Exp.	11	24					37
Street Light Sys., Operation and Maintenance			8	74	65	79	95
Promotion of Business					28	51	40
Billing and Collecting							
Gen. Office, Sal. and Exp.	729	57	302	30	712	838	534
Undistributed Expenses			112	98	218	27	15
Int. and Deb. Payments	754	98	814	89	725	886	960
Total Expenses	3,438	95	4,785	72	4,551	5,159	4,954
Surplus	131	49	550	77	414	1,241	2,046
Loss					69	20	11
Depreciation Charge			450	00	414	500	530
Surp. Less Depr. Chg.			100	77	103	741	1,516

“s” 8 months' operation.

“ C ”—Continued

Municipalities for the year ending 31st December, 1913, 1914 and 1915

Norwich 1,301	Elora 1,216		Caledonia 1,202			Victoria Harbor 1,200
1915	1914	1915	1913	1914	1915	1915
	i		o			g
\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.
2,529 91	101 98	1,044 49	404 60	880 54	265 62	105 79
1,075 79	167 25	1,820 07	h	h	950 38	117 85
2,169 31	.....	197 78	470 34	188 54	138 42	.....
1,126 00	110 33	1,000 00	584 00	780 00	808 00	141 00
2,504 61	.....	214 97	.....	.....	.....	.....
9,405 62	379 56	4,277 31	1,458 94	1,849 08	2,162 42	364 64
.....
2,954 63	133 05	1,711 73	766 70	669 00	793 00	172 82
.....
809 58	.....	274 00	23 05	92 95	53 58	17 89
7 05	.....	.....	.....	.....	.....	.....
1 32	.....	.....	.....	.....	.....	.....
.....
75 95	24 78	61 52	.....	35 80	22 28	.....
.....
595 76	66 19	785 52	48 28	66 82	92 76	30 00
.....
1,985 15	125 35	846 15	134 47	122 86	361 72	.....
6,429 44	349 37	3,678 92	972 50	987 43	1,343 34	220 71
2,976 18	30 19	598 39	486 44	861 65	819 08	143 93
.....
1,195 00	.....	460 00	250 00	260 00	300 00	.....
1,781 18	30 19	138 39	236 44	601 65	519 08	.....

“ i ” 1 month's operation.
“ o ” 10 months' operation.
“ g ” 3 months' operation.

STATEMENT

Comparative Detailed Operating Reports of Electric Departments of

Municipality	New Toronto		Waterford	Hagersville	
Population	1,153		1,134	1,091	
—	1914	1915	1915	1913	1914
EARNINGS				g	
	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.
Domestic Light	653 56	.....	685 22	81 42	1,222 33
Commercial Light	h	1,416 10	546 08	h	h
Power .....	.....	2,140 36	.....	746 85	2,679 08
Street Light	600 00	783 00	892 50	300 00	1,200 00
Miscellaneous .....	.....	.....	.....	.....	.....
Total	1,253 56	4,339 46	2,123 80	1,128 27	5,101 41
EXPENSES					
Power Purchased	233 30	1,351 92	931 11	967 23	3,084 34
Sub-Stn. Operation .....	.....	.....	.....	.....	.....
“ “ Maint'ce. ....	.....	.....	.....	.....	.....
Dist. System, Operation and Maintenance	50 73	137 80	26 30	.....	52 15
Line Transformer M't'c'e. ....	.....	.....	.....	.....	.....
Meter .....	.....	.....	.....	.....	.....
Consumers' Premises—Exp. ....	.....	.....	.....	.....	.....
Street Light Sys., Opera tion and Maintenance..	137 85	55 00	23 16	.....	73 00
Promotion of Business ..	.....	.....	.....	.....	.....
Billing and Collecting ..	.....	.....	.....	.....	.....
Gen. Office, Sal. and Exp..	318 01	629 49	78 41	37 69	545 77
Undistributed Expenses ..	.....	.....	.....	.....	.....
Int. and Deb. Payments..	178 44	654 10	978 56	97 60	383 93
Total Expenses	918 33	2,828 31	2,037 54	1,102 52	4,139 19
Surplus	335 23	1,511 15	86 26	25 75	962 22
Loss .....	.....	.....	.....	.....	.....
Depreciation Charge .	200 00	550 00	.....	.....	425 00
Surp. Less Depr. Chg.	135 23	961 15	.....	.....	537 22

“g” 3 months' operation.

“C”—Continued

Hydro Municipalities for the year ending December 31st, 1913, 1914 and 1915

Hagersville	Winchester		Beaverton	Stayner		
1,091	1,044		965	950		
1915	1914	1915	1915	1913	1914	1915
			t	n		
\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.
1,172 85	2,972 09	1,698 40	1,484 62	158 48	909 58	995 47
1,592 59	h	1,336 85	1,149 67	116 91	747 93	933 55
2,434 62	.....	.....	456 74	301 86	1,699 08	1,694 94
1,200 00	1,500 00	1,500 00	1,057 72	35 00	707 50	607 25
.....	.....	.....	109 08	.....	.....	.....
6,400 06	4,472 09	4,535 25	4,257 83	612 25	4,064 09	4,231 21
.....
3,010 99	1,827 07	2,137 86	4,002 69	187 52	2,726 45	2,524 18
.....
156 80	2 32	501 85	83 17	.....	56 85	67 53
.....
58 37	58 50	60 26	.....	.....	96 00	53 78
.....
595 22	173 09	380 55	152 02	14 48	31 00	98 02
.....
577 57	541 80	795 91	884 64	340 82	784 66	784 66
.....
4,398 94	2,602 78	3,876 43	5,122 52	542 82	3,694 96	3,528 17
2,001 12	1,869 31	658 82	.....	69 43	369 13	703 04
.....	.....	.....	864 69	.....	.....	.....
500 00	500 00	465 00	.....	.....	115 00	300 00
.....
1,501 12	1,369 31	193 82	.....	69 43	254 13	403 04
.....

“n” 2 months' operation.
“t” 14 months' operation.

STATEMENT

Comparative Detailed Operating Reports of Electric Departments of

Municipality	Pt. Credit			Cannington	Ayr
Population	944			917	910
—	1913	1914	1915	1915	1915
EARNINGS				t	y
	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.
Domestic Light	1,963 22	2,461 42	1,975 29	1,599 40	892 63
Commercial Light	c	c	587 11	1,120 04	773 08
Power	848 59	308 88	236 47	464 26	348 78
Street Light	696 00	810 60	1,000 00	980 12	1,091 33
Miscellaneous				22 58	
Total	3,507 81	3,580 90	3,798 87	4,186 40	3,105 82
EXPENSES					
Power Purchased	1,210 65	1,333 00	1,406 46	3,852 03	1,170 61
Sub-Stn. Operation					
“ “ Maint'ce.					
Dist. System, Operation and Maintenance	22 21	23 51	77 77	251 70	
Line Transformer M't'c'e.					
Meter					
Consumers' Premises—Exp.					
Street Light Sys., Operation and Maintenance.	121 27	72 77	22 29	11 04	45 20
Promotion of Business ..					
Billing and Collecting					
Gen. Office, Sal. and Exp.	171 82	450 67	470 75	223 48	397 82
Undistributed Expenses ..		18 46			
Int. and Deb. Payments.	534 23	571 55	537 22	1,006 80	1,119 49
Total Expenses	2,060 18	2,469 96	2,514 49	5,345 05	2,733 12
Surplus	1,447 63	1,110 94	1,284 38		372 70
Loss				1,158 65	
Depreciation Charge .	446 00	535 00	600 00		250 00
Surp. Less Depr. Chg.	1,001 63	575 94	684 38		122 70

“ t ” 14 months' operation.

“ y ” 11 months' operation.

"C"—Continued

Hydro Municipalities for the years ending December 31st, 1913, 1914 and 1915

Dutton 890	Chesterville 885		Pt. Stanley 876		
1915	1914	1915	1913	1914	1915
<i>g</i>					
\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.
318 85	530 13	919 27	1,828 66	2,066 41	2,498 57
206 59	791 67	1,187 54	1,771 70	1,753 60	1,736 42
.....	.....	.....	2,418 00	2,170 88	2,064 76
364 23	465 00	689 00	2,199 50	1,961 35	1,900 50
.....	.....	.....	.....	157 77	226 18
889 67	1,786 80	2,795 81	8,217 86	8,110 01	8,426 43
442 18	1,107 66	2,123 30	3,506 43	3,682 26	4,735 96
.....
15 55	.....	126 30	354 49	116 92	65 01
.....
12 04	.....	.....	.....	.....	63 13
.....
79 30	59 00	56 77	292 81	286 23	.....
.....	.....	.....	368 47	581 96	919 21
144 70	344 00	572 55	1,188 91	1,232 82	1,232 82
693 77	1,510 66	2,878 92	5,711 11	5,900 19	7,016 13
195 90	276 14	.....	2,506 75	2,209 82	1,410 30
.....	.....	83 11	.....	.....	.....
.....	247 50	.....	617 75	950 00	740 00
.....	28 64	.....	1,889 00	1,259 82	670 30

"g" 3 months' operation.

STATEMENT

Comparative Detailed Operative Reports of Electric Departments of

Municipality	Waterdown			Elmvale	
Population	817			775	
—	1913	1914	1915	1913	1914
EARNINGS				w	
	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.
Domestic Light	1,164 29	1,054 13	1,202 41	284 34	673 18
Commercial Light	h	535 83	567 65	358 60	896 11
Power	917 63	1,011 38	1,207 80	.....	438 38
Street Light	435 00	510 00	580 80	302 00	624 00
Miscellaneous .....	.....	418 46	1,488 36	.....	.....
Total	2,516 94	3,529 80	5,046 22	944 94	2,631 67
EXPENSES					
Power Purchased	988 00	1,660 71	1,605 10	506 33	898 78
Sub-Stn. Operation .....	.....	.....	.....	.....	.....
“ “ Maint'ce... ..	.....	.....	.....	.....	.....
Dist. System, Operation and Maintenance	183 71	67 66	281 36	7 86	326 94
Line Transformer M't'c'e. Meter .....	.....	.....	.....	.....	.....
Consumers' Premises—Exp. Street Light Sys., Opera- tion and Maintenance..	35 31	48 15	17 00	.....	.....
Promotion of Business ..	.....	.....	.....	.....	.....
Billing and Collecting ...	.....	.....	.....	.....	.....
Gen. Office, Sal. and Exp..	213 14	207 87	327 69	75 12	434 67
Undistributed Expenses ..	.....	.....	.....	.....	.....
Int. and Deb. Payments..	521 56	723 09	1,243 23	449 76	434 67
Total Expenses	1,941 72	2,707 48	3,474 38	1,039 07	2,108 42
Surplus	575 22	822 32	1,571 84	.....	523 25
Loss .....	.....	.....	.....	94 13	.....
Depreciation Charge .	365 00	420 00	1,000 00	.....	350 00
Surp. Less Depr. Chg.	210 22	402 32	571 84	.....	173 25

“C”—Continued

Hydro Municipalities for the year ending December 31st, 1913, 1914 and 1915

Elmvale 775	Lucan ^y 720	Baden 710			Thamesville 708
1915	1915	1913	1914	1915	1915
	y				g
\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.
704 12	824 07	884 11	1,247 81	.....	378 79
778 93	687 37	h	h	938 33	283 86
1,186 44	18 66	2,242 77	4,580 23	4,588 87	.....
624 00	812 60	830 95	705 68	580 06	255 00
.....
3,293 49	2,342 70	3,957 83	6,533 72	6,107 26	917 65
.....
1,335 80	1,511 32	2,807 04	4,541 56	4,153 75	537 22
.....
300 00	.....	28 84	179 28	52 26	4 15
.....
15 17	.....	.....	14 52	43 53	40 00
.....
213 27	440 03	267 45	389 45	357 10	116 00
.....
546 42	412 43	325 26	325 26	373 71	.....
.....
2,410 66	2,363 74	3,428 59	5,450 07	4,980 35	697 37
882 83	.....	529 24	1,083 65	1,126 91	220 28
.....	21 08	.....	.....	.....	.....
385 00	.....	277 00	280 00	300 00	.....
.....
497 83	.....	252 24	803 65	826 91	.....
.....

“ y ” 11 months' operation.

“ g ” 3 months' operation.

STATEMENT

Comparative Detailed Operating Reports of Electric Departments of Hydro

Municipality	Bothwell	Burford	Bolton	Wood- bridge	Rockwood	
Population	707	700	674	651	650	
—	1915	1915	1915	1915	1913	1914
EARNINGS	g	w	o		f	
	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.
Domestic Light	230 61	176 14	624 86	367 49	230 27	848 55
Commercial Light	191 21	111 81	553 80	443 53	c	h
Power		235 76	313 74	498 44	480 82	1,542 01
Street Light	219 25	279 48	811 25	960 00	196 00	549 50
Miscellaneous						
Total	641 07	803 19	2,303 65	2,269 46	907 09	2,940 06
EXPENSES						
Power Purchased	440 00	571 55	1,126 94	877 63	237 50	1,113 49
Sub-Stn. Operation						
“ “ Maint'ce.						
Dist. System, Operation and Maintenance			206 57	66 65		
Line Transformer M't'c'e. Meter						
Consumers' Premises—Exp. Street Light Sys., Opera- tion and Maintenance.	36 72		12 12	24 96		36 14
Promotion of Business ..						
Billing and Collecting ...						
Gen. Office, Sal. and Exp.	4 80	77 06	314 26	153 75	44 46	119 55
Undistributed Expenses ..						
Int. and Deb. Payments ..		201 21	552 32	239 38	357 49	413 19
Total Expenses	481 52	849 82	2,212 21	1,362 37	639 45	1,682 37
Surplus	159 55		91 44	907 09	267 64	1,257 69
Loss		46 63				
Depreciation Charge ..				425 00		275 00
Surp. Less Depr. Chg.				482 09	267 64	982 69

“ g ” 3 months' operation.

“ f ” 4 months' operation.

“ w ” 6 months' operation.

“ o ” 10 months' operation.

“ C ”—Continued

Municipalities for the year ending 31st December 1913, 1914 and 1915

Rockwood 650	Coldwater 614			Waubau- shene 600	St. George 600	Princeton 600	Creemore 582
1915	1913	1914	1915	1915	1915	1915	1914
				y	f	y	n
\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.
731 97	735 68	853 56	874 94	516 34	203 23	440 42	97 31
251 27	h	589 85	703 35	220 50	139 16	71 57	127 31
907 57	247 19	617 26	363 88	32 28	311 30	.....	39 60
507 50	532 00	528 00	528 00	377 00	202 50	340 00	138 80
.....
2,398 31	1,514 87	2,588 67	2,470 17	1,146 12	856 19	851 99	403 02
.....
1,154 85	535 86	897 12	1,018 75	560 77	411 15	507 23	162 00
.....
.....	74 58	139 37	138 72	16 55	.....	.....	.....
.....
.....
13 92	32 92	32 00	20 00	.....	.....	.....	.....
.....
115 74	1 50	68 00	80 00	175 55	64 30	11 84	6 14
.....	.....	.....	300 00	.....	.....	.....	.....
445 80	.....	481 64	481 64	220 84	172 00	263 35	20 59
.....
1,730 31	644 86	1,618 13	2,039 11	973 21	647 45	782 42	188 73
668 00	870 01	970 54	431 06	172 91	208 74	69 57	214 29
.....
300 00	375 00	380 00	380 00	.....	.....	.....	.....
.....
368 00	495 01	590 54	51 06	.....	.....	.....	214 29
.....

“ y ” 11 months' operation.
“ f ” 4 months' operation.
“ n ” 2 months' operation.

STATEMENT

Comparative Detailed Operative Reports of Electric Developments of

Municipality	Creemore	Sunderland	Plattsville	Beachville	
Population	582	570	550	503	
—	1915	1915	1915	1913	1914
EARNINGS	t			x	
	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.
Domestic Light	699 81	794 83	551 39	562 37	587 33
Commercial Light	937 84	939 85	477 71	c	c
Power	939 20	.....	1,128 27	5,993 81	5,368 04
Street Light	857 28	323 82	498 00	206 03	430 00
Miscellaneous	1 35	20 08	.....	.....	.....
Total	3,435 48	2,078 58	2,655 37	6,762 21	6,385 37
EXPENSES					
Power Purchased	2,580 53	2,229 13	2,031 19	4,221 68	3,283 89
Sub-Stn. Operation .....	.....	.....	.....	.....	.....
“ “ Maint'ce. ....	.....	.....	.....	.....	.....
Dist. System, Operation and Maintenance	185 17	.....	.....	54 34	34 85
Line Transformer M't'ce. Meter .....	.....	.....	.....	.....	.....
Consumers' Premises—Exp. Street Light Sys., Operation and Maintenance..	14 80	24 96	14 02	76 37	44 46
Promotion of Business ..	.....	.....	.....	.....	.....
Billing and Collecting ..	.....	.....	.....	.....	.....
Gen. Office, Sal. and Exp..	221 98	33 27	85 42	249 50	193 11
Undistributed Expenses ..	.....	.....	.....	127 62	29 18
Int. and Deb. Payments..	509 55	399 07	386 29	288 88	501 45
Total Expenses	3,512 03	2,686 43	2,516 92	5,018 39	4,086 40
Surplus .....	.....	.....	138 45	1,743 82	2,298 97
Loss	76 55	607 85	.....	.....	.....
Depreciation Charge ..	.....	.....	.....	525 00	400 00
Surp. Less Depr. Chg. ....	.....	.....	.....	1,218 82	1,898 97

“ t ” 14 months' operation.

“ C ”—Continued

Hydro Municipalities for the years ending December 31st, 1918, 1914 and 1915

Beachville 503	Brechin 1915	Comber	Drumbe	Delaware	Dorchester	Embro
1915		1915	1915	1915	1915	1915
		u		o		y
\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.
363 33	148 83	214 87	304 39	146 16	579 23	400 50
296 37	407 78	274 49	288 99	114 18	309 88	489 67
5,593 15	1,007 59	.....	159 85	.....	287 95	.....
430 00	117 00	448 37	455 00	188 18	85 72	620 68
.....
6,682 85	1,681 20	937 73	1,208 23	448 52	1,262 78	1,510 85
.....
4,522 88	2,578 40	620 24	795 36	217 11	583 47	782 02
.....
27 76	.....	.....	.....	.....	.....	16 00
.....
9 95	.....	.....	.....	.....	.....	36 28
.....
258 66	86 22	135 76	51 29	71 89	58 54	95 98
.....
357 79	96 80	172 92	281 33	77 13	159 47	285 25
.....
5,177 04	2,761 42	928 92	1,127 98	366 13	801 48	1,215 53
1,505 81	.....	8 81	80 25	82 39	461 30	295 32
.....	1,080 22	.....	.....	.....	.....	.....
420 00	.....	.....	.....	.....	200 00	250 00
.....
1,085 81	.....	.....	.....	.....	261 30	45 32
.....

“ v ” 7 months' operation.
“ o ” 10 months' operation.
“ y ” 11 months' operation.

STATEMENT

Comparative Detailed Operative Reports of Electric Departments of

Municipality Population	Lynden	Lambeth	Mt. Brydges	Pt. McNicol	Thamesford
—	1915	1915	1915	1915	1914
EARNINGS	n	e	e	y	o
	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.
Domestic Light	60 00	344 47	.....	415 03	393 49
Commercial Light	28 94	119 00	427 45	311 20	323 92
Power .....	.....	559 82	517 50	.....	946 32
Street Light	67 50	295 16	449 66	351 00	372 16
Miscellaneous .....	.....	.....	.....	.....	.....
Total	156 44	1,318 45	1,394 61	1,077 23	2,035 89
EXPENSES					
Power Purchased	55 95	1,316 08	1,025 71	616 27	1,031 10
Sub-Stn. Operation .....	.....	.....	.....	.....	.....
“ “ Maint’ce. ....	.....	.....	.....	.....	.....
Dist. System, Operation and Maintenance .....	.....	20 10	22 05	18 88	9 80
Line Transformer M’t’ce. ....	.....	.....	.....	.....	.....
Meter .....	.....	.....	.....	.....	.....
Consumers’ Premises—Exp. Street Light Sys., Opera- tion and Maintenance..	.....	.....	.....	24 24	23 68
Promotion of Business ..	.....	.....	.....	.....	.....
Billing and Collecting ..	.....	.....	.....	.....	.....
Gen. Office, Sal. and Exp..	.....	44 71	117 38	164 58	125 94
Undistributed Expenses ..	.....	.....	.....	.....	.....
Int. and Deb. Payments..	.....	156 10	358 60	203 14	249 94
Total Expenses	55 95	1,536 99	1,523 74	1,027 11	1,440 46
Surplus	100 49	.....	.....	50 12	595 43
Loss .....	.....	218 54	129 13	.....	.....
Depreciation Charge .	.....	.....	.....	.....	250 00
Surp. Less Depr. Chg.	.....	.....	.....	.....	345 43

“n” 2 months’ operation.

“e” 9 months’ operation.

“y” 11months’ operation.

“ C ”—Continued

Hydro Municipalities for the years ending December 31st, 1913, 1914 and 1915

Thamesford	Woodville	Williams- burg	Thorndale		Toronto Township	
1915	1915	1915	1914	1915	1914	1915
	t		o		p	
\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.
574 34	324 34	403 72	446 27	299 37	8,151 12	8,615 27
481 78	563 68	139 26	h 374 09	374 09	.....	.....
423 21	1,149 17	.....	329 27	542 53	.....	.....
469 00	507 60	156 00	294 00	294 00	.....	.....
.....
1,948 33	2,544 89	698 98	1,069 54	1,509 99	8,151 12	8,615 27
.....
993 40	3,815 56	318 62	510 00	883 86	3,085 55	2,153 94
.....
7 19	12 00	82 50	5 25	71 52	284 02	706 20
.....
27 47	26 64	.....	29 04	7 19	.....	.....
.....
159 32	42 87	30 02	94 12	64 63	374 61	376 04
.....
209 41	295 48	211 27	109 92	11 74	1,358 65	3,482 49
.....
1,396 79	4,192 55	642 41	748 33	1,138 94	5,102 83	6,718 67
551 54	.....	56 57	321 21	371 05	3,048 29	1,896 60
.....	1,647 66	.....	.....	.....	.....	.....
250 00	.....	.....	130 00	135 00	.....	1,800 00
.....
301 54	.....	.....	191 21	236 05	3,048 29	96 60
.....

“ t ” 14 months' operation.
“ s ” 8 months' operation.
“ o ” 10 months' operation.
“ p ” 17 months' operation.

STATEMENT "D"

Showing Comparative Revenue and Number of Consumers in Municipalities in which Hydro Power has been in use for Two Years or More.

Municipality	Year	Revenue				Consumers			
		Domestic Lt.	Commercial Lt.	Power	Street Lt.	Domestic	Commercial	Power	Total
		\$ c.	\$ c.	\$ c.	\$ c.				
Toronto.....	1912	201,554 74		225,451 55	275,666 23	11,441	*	518	11,959
	1913	190,376 89	233,799 04	347,708 88	344,933 79	16,519	4,764	1,037	22,320
	1914	289,645 45	305,534 31	483,681 15	364,214 17	23,181	6,276	1,494	30,951
	1915	331,807 18	291,907 92	575,239 17	350,085 97	29,724	7,227	1,504	38,455
Ottawa.....	1912	62,598 18	51,365 91	25,299 94	40,970 21	5,390	440	90	5,920
	1913	68,032 27	53,438 04	26,978 76	49,199 56	5,766	818	152	6,736
	1914	68,767 48	51,769 72	31,748 23	33,895 95	6,342	852	156	7,350
	1915	67,441 19	46,636 99	32,126 50	36,989 47	7,338	1,060	140	8,538
Hamilton.....	1913	34,451 95	25,453 99	47,415 58	2,250 89	5,117	924	209	6,250
	1914	74,668 38	35,125 57	70,665 43	51,154 36	8,404	1,375	337	10,116
	1915	92,207 60	34,633 16	84,789 71	86,179 51	10,595	1,434	406	12,435
London.....	1912	28,196 62	28,527 44	52,633 00	29,270 00	3,851	792	158	4,801
	1913	41,932 42	39,256 07	79,758 96	28,372 00	5,201	1,007	198	5,406
	1914	57,473 08	47,593 44	130,936 35	30,535 83	6,299	1,075	249	7,649
	1915	57,184 75	43,751 37	148,567 23	31,168 87	7,326	1,046	271	8,643
Brantford.....	1914	7,103 77	5,392 87	647 69	21,724 64	1,184	300	11	1,495
	1915	13,629 36	10,746 67	12,901 29	28,691 05	1,615	321	18	1,954
Windsor.....	1914	3,143 41	1,107 38	9 77	3,997 85	1,802	257	10	2,069
	1915	23,161 57	12,003 99	3,734 81	31,947 11	2,519	377	43	2,939
Peterboro'.....	1914	8,661 71	7,749 91	7,013 23	3,081 59	2,692	507	93	3,292
	1915	27,998 24	27,563 41	30,185 83	12,294 64	3,221	602	113	3,936
Berlin.....	1912	14,585 02	19,080 32	28,654 23	12,387 63	1,022	422	105	1,549
	1913	15,291 37	19,548 91	35,655 90	16,155 75	1,291	470	127	1,888
	1914	17,757 08	19,549 45	49,173 17	16,544 11	1,694	519	130	2,343
	1915	19,108 60	16,807 15	54,732 50	17,017 43	2,032	546	138	2,716
Pt. Arthur....	1913	81,830 66	*	51,748 11	14,709 41	2,409	500	55	2,964
	1914	38,097 65	32,933 91	92,804 49	15,458 88	2,969	550	55	3,574
	1915	32,048 37	28,662 58	85,060 78	16,726 46	2,800	550	50	3,400
St. Catharines.	1914	2,013 49	412 75	12,742 98	944 63	833	92	20	945
	1915	9,540 70	3,810 11	25,193 30	11,579 42	1,612	192	34	1,838
Stratford.....	1912	6,942 56	14,661 16	8,834 40	9,272 00	640	316	76	1,032
	1913	11,550 71	17,072 61	14,272 59	9,272 00	1,042	367	92	1,501
	1914	15,180 91	16,336 30	16,519 24	9,272 00	1,403	396	99	1,898
	1915	16,967 58	14,766 75	15,415 78	15,466 32	1,724	439	104	2,267
Guelph.....	1912	10,251 87	16,400 57	30,139 00	11,000 00	960	345	73	1,378
	1913	11,528 07	15,075 61	42,091 34	9,500 04	1,260	400	85	1,745
	1914	16,920 54	15,923 51	38,148 46	9,590 66	1,573	441	80	2,094
	1915	15,514 10	12,692 86	38,404 28	9,298 95	1,824	474	81	2,379
St. Thomas...	1912	7,596 01	18,741 74	14,761 30	12,208 30	620	300	60	980
	1913	11,125 50	16,097 41	36,550 26	10,989 72	951	329	70	1,350
	1914	13,221 00	13,480 75	44,247 13	11,025 36	1,499	384	92	1,975
	1915	16,517 37	13,422 48	44,780 45	14,199 64	1,903	434	101	2,438
Galt.....	1912	8,183 69	9,732 86	10,042 59	5,000 70	830	250	47	1,127
	1913	10,535 38	11,648 49	16,575 61	6,280 25	1,122	353	65	1,540
	1914	15,797 16	11,952 75	23,826 87	8,500 00	1,745	339	70	2,154
	1915	17,024 42	8,794 36	30,547 84	12,981 29	2,038	375	75	2,488
Woodstock....	1912	4,914 92	13,316 02	21,087 61	5,400 00	464	265	43	772
	1913	6,495 02	12,942 32	20,262 52	7,160 00	636	282	55	973
	1914	8,807 40	11,610 14	19,832 26	7,320 00	949	337	57	1,343
	1915	10,472 14	11,718 95	20,742 18	7,810 08	1,099	360	62	1,521
Welland.....	1913	1,369 67	558 46	4,307 21	1,395 00	408	53	18	479
	1914	4,411 20	1,676 38	8,305 71	5,049 00	492	53	23	568
	1915	4,643 16	1,600 79	38,541 88	5,235 75	467	57	23	547
Barrie.....	1913	10,071 59	9,252 70	3,390 29	4,292 53	563	200	13	776
	1914	11,149 49	9,464 64	3,712 24	4,572 75	651	200	13	864
	1915	11,087 68	9,572 91	4,567 76	5,075 00	843	252	14	1,109

STATEMENT "D"—Continued

Showing Comparative Revenue and Number of Consumers in Municipalities in which Hydro Power has been in use for Two Years or More.

Municipality	Year	Revenue				Consumers			
		Domestic Lt.	Commercial Lt.	Power	Street Lt.	Domestic	Commercial	Power	Total
Midland	1912	\$ 5,878 05	\$ 5,878 05	\$ 3,188 03	\$ 3,777 65	420	165	18	603
	1913	6,095 11	6,104 16	5,700 22	3,433 07	491	172	25	688
	1914	6,941 07	5,084 06	6,484 43	3,728 76	621	176	32	829
	1915	6,580 45	4,462 54	10,229 52	3,100 00	689	188	39	916
Collingwood ..	1913	7,013 66	9,362 17	896 72	3,802 88	477	220	18	715
	1914	7,857 86	7,555 54	5,165 39	4,647 00	554	232	21	807
	1915	7,094 27	5,688 26	9,527 70	4,715 00	622	233	26	881
Ingersoll	1912	3,073 73	6,648 28	14,430 66	3,000 00	220	142	38	400
	1913	3,595 03	6,048 51	15,293 44	4,262 03	278	170	44	492
	1914	5,085 32	6,359 72	12,818 27	3,960 04	416	194	48	658
	1915	5,480 52	5,716 91	16,251 18	3,564 80	497	197	52	746
Preston	1912	4,234 68	5,237 99	15,478 14	2,585 00	341	131	21	492
	1913	5,477 10	5,366 77	21,017 68	2,594 55	526	151	28	705
	1914	6,520 39	5,011 15	21,975 26	2,778 48	629	165	29	823
	1915	6,615 91	4,488 76	21,698 34	2,830 50	714	174	30	918
Waterloo	1912	4,057 46	4,524 93	11,545 93	4,538 82	239	112	35	386
	1913	4,263 66	5,098 42	14,970 14	5,294 10	321	125	44	490
	1914	4,723 94	4,825 22	13,282 14	5,137 84	430	153	51	634
	1915	5,401 82	5,284 87	15,125 32	5,773 20	524	162	53	739
Dundas	1913	3,045 85	4,193 27	3,070 40	60 10	377	134	27	538
	1914	5,349 24	4,198 64	4,305 96	3,050 85	520	153	30	703
	1915	6,139 97	4,310 96	5,930 54	3,460 35	613	160	37	810
Goderich	1914	7,197 05	4,196 49	1,240 73	5,525 00	400	155	10	565
	1915	6,072 51	5,066 76	5,645 26	5,525 00	441	168	8	617
Walkerville ...	1914	3,037 96	1,492 84	6,042 11	1,716 61	790	175	75	1,040
	1915	13,036 98	7,836 93	39,523 81	3,601 29	1,159	195	72	1,421
Paris	1914	4,766 23	2,778 09	1,419 90	4,103 00	354	142	1	497
	1915	5,071 54	4,063 03	6,328 33	4,576 00	477	150	4	631
Brampton	1912	3,004 66	2,893 74	3,531 34	3,500 00	409	104	12	525
	1913	5,617 61	3,986 65	10,557 72	3,500 00	643	138	16	797
	1914	6,798 89	4,055 99	10,658 33	4,200 00	627	174	21	822
	1915	6,860 48	4,053 56	11,624 83	4,486 00	691	174	21	886
Penetang	1912	1,676 26	3,836 30	2,207 51	1,962 00	101	87	13	201
	1913	1,989 80	4,511 16	8,775 95	2,042 00	128	91	15	234
	1914	1,936 73	3,064 83	8,001 69	2,016 00	153	100	15	268
	1915	2,050 69	2,676 60	10,048 08	2,095 00	174	102	15	291
St. Mary's	1912	4,967 16	4,069 20	6,001 30	3,449 50	240	143	20	403
	1913	3,815 77	4,553 73	8,221 72	3,582 00	396	160	29	588
	1914	4,614 95	4,733 33	10,610 05	3,441 00	454	161	30	645
	1915	5,073 97	4,222 53	8,379 87	3,850 00	528	151	33	712
Tillsonburg ...	1912	3,233 92	3,350 91	3,283 75	3,073 50	200	128	6	334
	1913	2,796 57	4,677 38	4,763 15	2,601 00	254	143	17	414
	1914	3,367 74	4,579 37	6,303 09	2,463 96	300	160	16	476
	1915	3,203 51	4,236 42	5,619 15	2,507 81	348	161	15	524
Prescott	1914	4,868 75	3,600 00	1,099 27	2,500 00	342	122	10	474
	1915	4,058 14	3,033 62	3,431 45	2,500 00	369	145	11	525
Hespeler	1913	2,189 00	1,684 75	5,044 30	1,500 00	174	76	11	261
	1914	2,635 41	1,934 75	6,116 27	1,478 00	229	85	13	327
	1915	2,787 48	2,334 15	9,017 58	1,536 00	272	90	14	376
Elmira	1914	1,958 41	2,020 81	1,876 49	1,680 00	158	65	8	231
	1915	2,059 11	1,674 44	2,801 33	1,680 00	185	85	10	280
Weston	1912	3,979 81	750 00	1,674 28	1,788 00	225	15	4	344
	1913	4,117 20	1,475 74	6,166 97	2,052 00	360	34	6	400
	1914	3,741 84	1,599 97	4,958 59	3,067 50	352	78	10	440
	1915	4,407 36	1,305 90	4,798 33	3,684 67	441	90	9	540

*Domestic and Commercial light not separated.

STATEMENT "D"—Continued

Report Showing Comparative Revenue and Number of Consumers in Municipalities in which Hydro Power has been in use for Two Years or More.

Municipality	Year	Revenue				Number of Consumers			
		Domestic Lt.	Commercial Lt.	Power	Street Lt.	Domestic	Commercial	Power	Total
Clinton	1914	2,023 70	2,028 08	1,255 33	1,105 66	179	111	7	297
	1915	2,930 57	3,068 63	2,018 24	1,630 40	204	110	6	320
Georgetown ..	1913	661 49	842 87	234 32	541 67	160	120	5	285
	1914	3,069 02	2,362 33	2,976 61	1,843 67	242	75	17	334
	1915	2,999 83	2,276 41	8,734 01	1,834 03	294	97	16	407
Mimico	1913	2,021 06	*	795 49	987 00	250	*	5	255
	1914	5,085 16	*	963 64	1,049 34	462	10	5	477
	1915	5,748 44	346 49	1,042 11	2,015 66	609	7	3	619
Milton	1913	1,149 28	1,212 26	6,462 38	900 00	110	74	5	189
	1914	1,961 22	2,226 80	11,325 61	1,350 00	150	79	6	235
	1915	1,981 80	1,900 98	5,364 29	1,575 00	170	80	7	257
Seaforth	1913	2,124 18	2,876 47	7,509 99	1,815 81	178	105	10	293
	1914	2,467 36	2,581 30	7,707 01	1,869 96	211	112	10	333
	1915	2,593 70	2,724 84	7,685 52	1,869 96	238	111	11	360
Acton	1913	1,236 50	1,567 48	318 77	1,000 00	82	62	3	147
	1914	1,463 72	1,496 18	836 13	1,563 00	146	58	5	209
	1915	1,931 11	1,725 73	1,019 27	1,555 00	183	53	5	241
Mitchell	1912	2,964 48	2,977 08	4,597 03	1,375 00	159	79	13	251
	1913	2,362 52	2,813 92	6,160 53	1,675 00	179	85	16	270
	1914	2,470 29	2,712 55	3,944 91	1,950 00	191	100	16	307
	1915	2,379 58	2,684 01	2,165 68	2,100 00	190	95	17	292
New Hamburg.	1912	1,195 08	1,423 35	3,369 05	1,627 00	124	63	5	192
	1913	1,589 21	1,890 72	5,792 20	1,827 00	142	63	8	213
	1914	1,779 90	1,403 56	5,209 51	1,827 00	170	68	6	244
	1915	1,888 04	1,273 38	2,825 57	1,827 00	187	70	4	261
Pt. Dalhousie.	1913	3,742 54	*	347 28	1,246 67	238	*	3	241
	1914	3,656 01	*	429 54	880 00	240	10	3	253
	1915	3,608 70	.....	252 12	968 00	250	10	2	262
Norwich	1912	862 17	674 48	263 93	591 00	128	64	2	194
	1913	1,926 78	1,162 98	1,978 55	1,285 50	166	76	3	245
	1914	2,168 13	995 16	1,893 72	1,197 00	198	84	3	285
	1915	2,529 91	1,075 79	2,169 31	1,126 00	228	80	5	313
Caledonia	1913	404 50	*	470 34	584 00	17	16	1	34
	1914	880 54	*	188 54	780 00	21	32	1	54
	1915	265 62	950 38	138 42	808 00	24	33	1	58
New Toronto..	1914	653 50	.....	.....	600 00	100	4	1	105
	1915	1,416 10	.....	2,140 36	783 00	153	8	2	163
Hagersville ...	1913	81 92	*	746 85	300 00	3	24	3	30
	1914	1,222 23	*	2,679 08	1,200 00	70	60	3	133
	1915	1,172 85	1,592 59	2,434 62	1,200 00	114	73	3	190
Winchester...	1914	1,672 09	1,300 00	.....	1,500 00	103	50	.....	153
	1915	1,698 40	1,336 85	.....	1,500 00	120	50	1	171
Stayner	1913	158 48	116 91	301 86	35 00	120	30	2	152
	1914	909 58	747 93	1,699 08	707 50	108	56	2	156
	1915	995 47	933 55	1,694 94	607 25	106	56	2	164
Pt. Credit	1913	1,963 22	*	848 59	696 00	93	21	2	116
	1914	2,461 42	*	308 88	810 00	125	35	2	162
	1915	1,975 29	587 11	236 47	1,000 00	141	33	3	177
Chesterville..	1914	530 13	791 67	.....	465 00	68	35	.....	103
	1915	919 27	1,187 54	.....	689 00	85	49	.....	134
Pt. Stanley ...	1912	897 02	1,106 63	1,314 70	1,545 10	122	40	3	165
	1913	1,828 06	1,771 70	2,418 00	2,199 50	182	60	9	251
	1914	2,066 41	1,753 60	2,170 83	1,961 35	229	72	12	313
	1915	2,498 57	1,736 42	2,064 76	1,900 50	274	73	9	356
Waterdown ...	1912	774 40	340 00	614 42	375 83	41	20	2	63
	1913	1,003 09	361 20	917 65	435 00	70	34	2	106
	1914	1,054 13	535 83	1,011 38	510 00	71	34	5	110
	1915	1,202 41	567 65	1,207 80	580 00	84	30	7	121

STATEMENT "D"—Continued

Showing Comparative Revenue and Number of Consumers in Municipalities in which
Hydro Power has been in use for Two Years or More.

Municipality	Year	Revenue				Consumers			
		Domestic Lt.	Commercial Lt.	Power	Street Lt.	Do- mestic	Com- merc'l	Power	Total
Elmvale.....	{1913	\$ 284 34	\$ 358 60	.....	\$ 302 00	52	52	1	105
	{1914	673 18	896 11	438 38	624 00	57	48	2	107
	{1915	704 12	778 93	1,186 44	624 00	78	64	2	144
Baden.....	{1913	884 11	*	2,242 77	830 95	75	*	4	79
	{1914	1,247 81	*	4,580 23	705 68	82	*	4	86
	{1915	938 33	.....	4,588 87	580 06	72	.....	4	76
Rockwood	{1913	230 27	*	480 82	196 00	48	9	1	58
	{1914	848 55	*	1,542 01	549 50	54	7	3	64
	{1915	731 97	251 27	907 57	507 50	65	10	3	78
Coldwater	{1913	405 43	330 25	247 19	532 00	48	32	1	81
	{1914	853 56	589 85	617 26	528 00	62	39	2	103
	{1915	874 94	703 35	363 88	528 00	66	37	2	105
Creemore.....	{1914	97 31	127 31	39 60	138 80	58	54	1	113
	{1915	699 81	937 84	939 20	857 28	78	59	1	138
Beachville	{1913	562 97	*	5,993 81	206 03	45	*	4	49
	{1914	587 33	*	5,368 04	430 00	45	*	4	49
	{1915	363 33	296 37	5,593 15	430 00	37	12	4	53
Thamesford ..	{1914	393 49	323 92	946 32	372 16	44	26	2	72
	{1915	574 34	481 78	423 21	469 00	59	26	2	87
Thorndale	{1914	446 27	.....	329 27	294 00	34	18	1	53
	{1915	299 37	374 09	542 53	294 00	32	20	1	53

*Domestic and Commercial light not separated.

STATEMENT "E"

Street Light Installation in Hydro Municipalities, December 31st, 1915, showing Cost per Year, Cost per Lamp, and Cost per Capita.

Municipality	Population	Number of Lamps	Size of Lamps	Cost per Lamp	Total Cost	Cost per Capita
Toronto	470,144	44,300	100-watt	\$ c. 8 00	\$ c. 350,085 97	\$ c. 74
Ottawa	101,785	{ 413 39 662 312 e 2,350 7,273	{ 100 " 400 " 600 " 100 " 100 " 100 "	{ 10 00 35 00 45 00 6 00 8 00 8 00	56,813 66	56
		{ 788 401	{ 250 " 500 "	{ 13 75 50 00		
Hamilton	101,344	{ 2,423 497	{ 100 " 100 "	{ 8 00 10 00 12 85	86,179 51	85
		{ 2,848 7 147 a	{ 100 " 150 "	{ 8 00 9 00 40 00		
London	56,358	{ 280 1,743	{ 500-watt 100 "	{ 50 00 12 00	31,168 87	55
		{ 146 b 55 a 350	{ 500 " 60 "	{ 50 00 50 50 9 00		
Brantford	26,389	{ 10 1,966	{ 500 " 100 "	{ 9 00	28,691 05	1 09
		{ 280 1,743	{ 500-watt 100 "	{ 50 00 12 00		
Windsor	22,993	{ 146 b 55 a 350	{ 500 " 60 "	{ 50 00 50 50 9 00	31,947 11	1 39
		{ 10 1,966	{ 500 " 100 "	{ 9 00		
Peterboro'	20,653	{ 10 1,966	{ 500 " 100 "	{ 9 00	12,294 64	59
		{ 10 1,966	{ 500 " 100 "	{ 9 00		
Berlin	19,056	{ 10 1,966	{ 500 " 100 "	{ 9 00	16,684 93	88
		{ 10 1,966	{ 500 " 100 "	{ 9 00		
Port Arthur	18,324	2,373	.....	.....	16,726 46	91
		2,373	.....	.....
St. Catharines	17,296	1,867	100-watt	8 00	11,579 42	67
		1,867	100-watt	8 00		
Stratford	17,006	{ 180 737	{ 500 " 100 "	{ 45 00 10 00	15,500 00	91
		{ 180 737	{ 500 " 100 "	{ 45 00 10 00		
Guelph	16,799	1,103	100 "	9 00	9,298 95	55
		1,103	100 "	9 00		
St. Thomas	16,794	{ 20 b 113 981 649	{ 252 " 500 " 75 " 100 "	{ 55 00 40 00 10 00 12 00	14,199 64	85
		{ 31 80 70 800	{ 100 " 400 " 500 " 100 "	{ 11 00 30 00 38 00 8 00		
Chatham	12,714	{ 191 28 22 10 77	{ 1 lt orna. 3 " 4 " 5 " 500-watt	{ 11 00 17 50 25 00 22 00 35 50	7,613 36	d
		{ 50 500 172	{ 250 " 100 " 60 "	{ 25 00 10 00 10 00		
Galt	12,060	{ 102 343	{ 250 " 100 "	{ 18 00 9 00	12,981 29	1 08
		{ 102 343	{ 250 " 100 "	{ 18 00 9 00		
Woodstock	10,265	{ 500 172	{ 100 " 60 "	{ 10 00 10 00	7,810 08	76
		{ 500 172	{ 100 " 60 "	{ 10 00 10 00		
Welland	7,243	{ 102 343	{ 250 " 100 "	{ 18 00 9 00	5,235 75	72
		{ 102 343	{ 250 " 100 "	{ 18 00 9 00		

STATEMENT "E"—Continued

Street Light Installation in Hydro Municipalities, December 31st, 1915, showing Cost per Year, Cost per Lamp, and Cost per Capita.

Municipality	Population	Number of Lamps	Size of Lamps	Cost per Lamp	Total Cost	Cost per Capita
Barrie	7,088	433	100-watt	\$ c. 12 00	\$ c. 5,075 00	\$ c. 72
Midland	6,375	{ 14 b 257	500 " 100 "	40 00 } 10 00 }	3,100 00	49
Collingwood.....	6,361	394	70 "	12 00	4,715 00	74
Ingersoll	5,200	{ 149 176	60 " 80 "	11 00 } 11 50 }	3,564 80	69
Preston.....	4,942	{ 47 207	200 " 100 "	12 00 } 11 00 }	2,830 50	57
Waterloo.....	4,908	{ 420 14	100 " 150 "	8 75 } 10 50 }	5,773 20	1 18
Dundas.....	4,687	310	100 "	9 00	2,790 00	60
Goderich	4,676	{ 16-5 lt. 8-1 " 8-1 "	..... ..... .....	55 00 } 40 00 } 25 00 }	5,645 26	1 20
Walkerville.....	4,565	275 683	100-watt 60 "	15 00 } r 5 60	s 8,111 46	1.78
Paris	4,383	{ 6 404	250 " 100 "	27 50 } 11 00 }	4,576 00	1 04
Simcoe	4,160	{	100 " 300 "	14 00 } 38 00 }	2,708 51	f
Brampton	4,160	563	100 "	8 00	4,486 00	1 08
Penetang.....	4,107	170	100 "	12 00	2,095 00	51
Wallaceburg.....	4,107	{ 167 28	100 " 500 "	13 50 } 30 00 }	2,680 61	k
St. Mary's.....	3,960	{ 210 45	100 " 250 "	13 00 } 25 00 }	3,850 00	97
Tillsonburg.....	3,050	231	100 "	11 00	2,507 81	82
Strathroy.....	2,899	{ 251 31	80 " 200 "	15 00 } 24 00 }	4,221 76	1 46
Prescott.....	2,919	375	100 "	.....	2,500 00	86
Hespeler	2,634	128	100 "	12 00	1,536 00	58
Elmira	2,200	145	100 "	12 00	1,680 00	76
Weston.....	2,186	{ 210 8-5lt.	100 " 100 "	12 00 } 40 00 }	2,840 00	1 30
Clinton	2,115	132	60 "	12 50	1,630 40	77
Georgetown	2,002	141	100 "	12 00	1,692 00	85
Mimico	1,965	150	100 "	11 00	1,650 00	84
Milton.....	1,942	178	100 "	11 00	1,575 00	81
Seaforth.....	1,871	{ 70 10 60	75 " 75 " 100 "	12 00 } 13 00 } 15 00 }	1,869 96	100
Acton	1,803	108	100 "	14 00	1,555 00	86
Tilbury.....	1,726	60	100 "	17 00	715 00	g
Mitchell	1,706	154	100 "	14 00	2,100 00	1 23

STATEMENT "E"—Continued

Street Light Installation in Hydro Municipalities, December 31st, 1915, showing Cost per Year
Cost per Lamp, and Cost per Capita.

Municipality	Population	Number of Lamps	Size of Lamps	Cost per Lamp	Total Cost	Cost per Capita
New Hamburg ...	1,612	210	100 Watt.	\$ c. 8 50	\$ c. 1,827 00	\$ c. 1 13
Fergus	1,605	126	100 "	12 50	1,744 75	1 09
Dresden	1,444	110	80 "	15 00	1,100 00	g
Pt. Dalhousie	1,318	87	100 "	12 00	968 00	73
Norwich.....	1,301	{ 50 64	{ 100 " 60 "	{ 11 00 9 00 }	1,126 00	86
Elora	1,216	80	100 "	12 50	1,000 00	82
Caledonia	1,202	59	100 "	12 00	808 00	67
Victoria Harbor..	1,200	47	100 "	12 00	141 00	n
New Toronto.....	1,153	65	100 "	12 00	783 00	68
Waterford	1,134	85	100 "	14 00	892 50	f
Hagersville	1,091	100	100 "	12 00	1,200 00	1 10
Winchester	1,044	100	100 "	15 00	1,500 00	1 44
Beaverton	965	71	100 "	13 00	1,057 72	c
Stayner.....	950	{ 43 15	{ 50 " 100 "	{ 9 00 12 00 }	607 25	64
Pt. Credit	944	91	100 "	11 00	1,000 00	1 06
Cannington	917	63	100 "	13 00	980 12	c
Ayr	910	.....	100 "	14 00	1,091 33	k
Dutton	890	95	100 "	15 50	364 23	h
Chesterville	885	53	100 "	13 00	689 00	78
Pt. Stanley	867	{ 111 46 j	{ 100 " 100 "	15 00	1,950 00	j
Waterdown	817	58	100 "	10 00	580 00	71
Elmvale.....	775	52	100 "	12 00	624 00	80
Lucan	720	35	100 "	15 00	812 60	q
Baden	710	58	100 "	10 00	580 00	82
Thamesville.....	708	68	100 "	15 00	255 00	h
Bothwell	707	74	100 "	15 00	219 25	h
Burford	700	44	100 "	13 00	279 48	t
Bolton	674	59	100 "	15 00	811 25	k
Woodbridge	651	73	100 "	13 00	960 00	1 47

STATEMENT "E"—Concluded

Street Light Installation in Hydro Municipalities, December, 31st, 1915 showing Cost per Year
Cost per Lamp, and Cost per Capita.

Municipalities	Population	Number of Lamps	Size of Lamps	Cost per Lamp	Total Cost	Cost per Capita
				\$ c.	\$ c.	\$ c.
Rockwood.....	650 {	40 5	100 Watt 40 "	12 00 12 00 }	507 50	78
Coldwater.....	614	44	100 "	12 00	528 00	89
Waubushene	600	29	100 "	12 00	377 00	m
St. George	600	33	100 "	15 00	202 50	n
Princeton	600	20	100 "	17 00	340 00	57
Creemore	582	54	100 "	16 00	857 28	1 47
Sunderland	570	21	100 "	13 00	323 82	c
Plattsville	550	32	100 "	16 00	498 00	91
Beachville	503	43	100 "	12 00	430 85	85
Brechin	under 590	9	100 "	13 00	117 00	.....
Comber	" "	36	100 "	16 50	448 37	f
Drumbo	" "	30	100 "	14 00	455 00	m
Delaware	" "	17	100 "	14 00	188 18	q
Dorchester	" "	23	100 "	14 00	85 72	h
Embro.....	" "	40	100 "	14 00	620 68	m
Lynden	" "	27	100 "	15 00	67 50	
Lambeth	" "	29	100 "	14 00	295 16	f
Mount Brydges ..	" "	31	100 "	14 00	449 66	f
Port McNicol	" "	27	100 "	12 00	351 00	m
Thamesford.....	" "	34	100 "	14 00	469 00	.....
Woodville	" "	32	100 "	13 00	507 60	c
Williamsburg	" "	16	100 "	13 00	156 00	f
Thorndale	" "	21	100 "	14 00	294 00	.....

NOTE:—

a Magnetite ares
b Open ares
c 14 months operation
d 7 months operation
e Installed by Dom. Gov't
f 9 months operation
g 8 " "
h 3 " "
j Summer service

k 11 months operation
m 13 " "
n 5 " "
p 2 " "
q 10 " "
r Does not include fixed charges
s Includes \$5,442.35 fixed charges, levied
direct
t 6 months operation

STATEMENT "F"

Cost per Kw-hr. of Domestic and Commercial Light, including Floor Space and Installed Capacity Charges; and Estimated Saving in 1915 to Hydro Light Users of Ontario Municipalities from Rate Reductions due to Hydro Service

Municipality	Service	Consumption Kw-hrs.	Total Cost	Old Rate Kw-hr.	Cost of Present Consumption at Old Rate	Saving in Year's Use	Total Saving	Net cost per Kw-hr.	
								1915	1914
			\$ c.		\$ c.		\$ c.		
Toronto...	{Dom. 8,599,559	331,807 18	8. +25c.	767,720 72	435,913 54	1,393,491 34	3.9	4.5	
	{Com. 10,243,496	291,907 92	12. +25c.	1,249,485 72	957,577 80		2.8	3.9	
Ottawa...	{Dom. 1,767,519	67,441 19	7.2 +8.33	154,101 36	66,660 17	129,121 59	3.8	5.0	
	{Com. 1,501,978	46,636 99	7.2 +8.33	109,098 41	62,461 42		3.1	4.9	
Hamilton.	{Dom. 2,514,104	92,207 60	8. +25c.	229,625 32	137,417 72	250,058 16	3.7	4.7	
	{Com. 1,840,920	34,633 16	8.	147,273 60	112,640 44		1.9	3.4	
London...	{Dom. 2,332,435	57,184 75	9. +25c.	230,355 15	173,170 40	263,359 67	2.4	4.8	
	{Com. 1,452,896	43,751 37	9. +25c.	133,940 64	90,189 27		3.0	3.	
Brantford	{Dom. 319,439	13,629 36	7.65 +13.5	26,689 96	13,060 60	29,388 33	4.3	4.9	
	{Com. 347,349	10,746 67	7.65 +13.5	27,074 40	16,327 73		3.1	3.5	
Windsor..	{Dom. 468,386	23,161 57	12.	56,206 32	33,044 75	35,815 32	4.9	....
	{Com. 309,757	12,009 99	8.	24,780 56	12,770 57		3.9	....
Berlin....	{Dom. 494,725	19,108 60	10.8 +25c.	59,013 30	39,904 70	87,258 27	3.9	4.9	
	{Com. 579,303	16,807 15	10.8 +25c.	64,160 72	47,353 57		2.9	3.5	
St.Cathar- ines ...	{Dom. 273,389	9,540 70	7.	19,137 23	9,596 53	19,510 34	3.5	3.7	
	{Com. 196,056	3,810 11	7.	13,723 92	9,913 81		1.9	1.8	
Stratford.	{Dom. 388,200	16,967 58	12. +25c.	51,273 00	34,305 42	68,925 99	4.4	5.5	
	{Com. 400,686	14,766 75	12. +25c.	49,387 32	34,620 57		3.7	4.7	
Guelph...	{Dom. 366,928	15,514 10	8. +15c.	32,419 64	16,905 54	40,040 64	4.2	5.9	
	{Com. 437,567	12,692 86	8. +15c.	35,827 96	23,135 10		2.8	4.9	
St.Thomas	{Dom. 460,103	16,517 37	11.	39,611 33	23,093 96	65,186 17	3.6	4.8	
	{Com. 504,679	13,422 48	11.	55,514 69	42,092 21		2.7	3.9	
Chatham .	{Dom. 110,552	5,581 54	8. +25c.	10,344 16	4,762 62	8,800 21	5.5	....
	{Com. 81,805	2,806 81	8. +25c.	6,844 40	4,037 59		3.4	....
Galt.....	{Dom. 512,443	17,024 42	11.	56,368 73	39,344 31	69,136 63	3.3	5.3	
	{Com. 350,788	8,794 36	11.	38,586 68	29,792 32		2.3	4.1	
Woodstock	{Dom. 230,297	10,472 14	8. +20c.	20,881 36	10,589 22	29,453 23	4.5	5.2	
	{Com. 371,787	11,718 95	8. +20c.	30,582 96	18,864 01		3.1	4.0	
Welland..	{Dom. 154,534	4,643 16	8. +25c.	13,802 72	9,159 56	13,270 97	3.0	3.7	
	{Com. 69,340	1,600 79	8. +25c.	5,712 20	4,111 41		2.3	2.6	
Barrie....	{Dom. 147,307	11,087 68	9.	13,257 63	2,169 95	8,527 04	7.1	7.3	
	{Com. 177,000	9,572 91	9.	15,930 00	6,357 09		5.4	6.8	
Midland..	{Dom. 199,257	6,580 45	8.5 +15c.	18,115 84	11,535 39	15,670 95	3.3	5.5	
	{Com. 97,300	4,462 54	8.5 +15c.	8,598 10	4,135 56		4.6	4.3	
Colling- wood ..	{Dom. 118,336	7,094 27	10. +15c.	12,892 00	5,797 73	12,188 17	6.0	7.6	
	{Com. 116,583	5,688 26	10. +15c.	12,077 70	6,389 44		4.9	6.1	
Ingersoll .	{Dom. 102,537	5,480 52	8. +25c.	9,673 96	4,193 44	10,218 77	5.3	7.5	
	{Com. 139,428	5,716 91	8. +25c.	11,742 24	6,025 33		4.1	5.9	
Preston ..	{Dom. 129,896	6,615 91	10. +18c.	14,197 40	7,581 49	15,284 33	5.1	6.0	
	{Com. 118,756	4,488 76	10. +18c.	12,191 60	7,702 84		3.8	4.7	
Waterloo.	{Dom. 106,570	5,401 82	10.8 +22.5	12,797 46	7,395 64	10,297 78	5.1	5.5	
	{Com. 107,821	5,284 87	7.2 +22.5	8,187 01	2,902 14		4.9	5.0	
Dundas...	{Dom. 128,600	6,139 97	10. +25c.	14,558 00	8,418 03	28,253 62	4.8	5.8	
	{Com. 157,477	4,310 96	15. +25c.	24,146 55	19,835 59		2.7	3.5	
Goderich .	{Dom. 92,406	6,072 51	9.	8,316 54	2,244 03	8,117 58	6.6	8.6	
	{Com. 121,559	5,066 76	9.	10,940 31	5,873 55		4.1	5.3	
Walker- ville....	{Dom. 241,771	13,036 98	15. 5	29,012 40	15,975 42	23,858 29	5.4	....
	{Com. 157,198	7,836 93	15. 10 5	15,719 80	7,882 87		4.4	....
Paris.....	{Dom. 87,239	5,071 54	7. +10c.	6,607 12	1,535 58	5,843 67	5.8	7.3	
	{Com. 100,259	4,063 03	8. +20c.	8,371 12	4,308 09		4.1	4.3	
Brampton	{Dom. 159,435	6,860 48	9. +15c.	15,535 35	8,674 87	15,439 04	4.3	4.9	
	{Com. 116,717	4,053 56	9. +15c.	10,817 73	6,764 17		3.5	4.0	

STATEMENT "F"—Continued

Cost per Kw-hr. of Domestic and Commercial Light, including Floor Space and Installed Capacity Charges; and Estimated Saving in 1915 to Hydro Light Users of Ontario
Municipalities from Rate Reductions due to Hydro Service

Municipality.	Service.	Consumption Kw-hrs.	Total Cost.	Old Rate Kw-hr.	Cost of Present Consumption at Old Rate	Saving in Year's Use	Total Saving	Net cost per Kw-hr.	
								1915	1914
			\$ c.		\$ c.	\$ c.	\$ c.		
Penetang .	{Dom. 42,843	2,050 69	10. +25c.	4,773 30	2,722 61	6,997 91	4.8	5.5	
	{Com. 66,489	2,676 60	10. +25c.	6,951 92	4,275 30		4.0	3.9	
Wallaceburg ...	{Dom. 56,482	4,079 74	11. +10c.	6,213 02	2,133 28	4,268 68	7.2	....
	{Com. 63,747	4,239 30	10. +10c.	6,374 70	2,135 40		6.6	....
St. Mary's	{Dom. 72,819	5,073 97	9. +15c.	7,435 71	2,361 74	5,237 97	6.9	6.7	
	{Com. 75,644	4,222 53	9. +15c.	7,098 76	2,876 23		5.5	6.3	
Tillsonburg ...	{Dom. 55,346	3,203 51	11. +25c.	7,060 06	3,856 55	7,422 17	5.7	7.3	
	{Com. 66,564	4,236 42	11. +25c.	7,802 04	3,565 62		6.3	5.9	
Strathroy.	{Dom. 36,200	3,380 78	12. +25c.	5,043 00	1,652 22	3,447 74	9.3	....
	{Com. 50,469	4,701 76	12. +25c.	6,497 28	1,795 52		9.3	....
Prescott..	{Dom. 67,130	4,058 14	9. +10c.	6,041 70	1,983 56	4,588 17	6.0	....
	{Com. 62,647	3,033 62	9. +10c.	5,638 23	2,604 61		4.8	....
Hespeler .	{Dom. 39,580	2,787 48	10. +15c.	4,333 00	1,545 52	3,309 07	7.0	7.6	
	{Com. 39,657	2,334 15	10. +15c.	4,097 70	1,763 55		5.9	5.4	
Elmira ...	{Dom. 27,576	2,059 11	11.4 +10c.	3,351 06	1,291 95	6,797 86	7.5	9.5	
	{Com. 28,368	1,674 44	11.4 +10c.	3,440 35	1,765 91		5.9	7.1	
Weston...	{Dom. 96,186	4,407 36	7.2 +22.5	7,995 39	3,588 03	4,493 77	4.6	4.7	
	{Com. 27,564	1,305 90	7.2 +22.5	2,211 64	905 74		4.7	4.6	
Clinton...	{Dom. 36,598	2,930 57	10. +25c.	4,235 80	1,235 97	2,520 74	8.2	9.4	
	{Com. 40,234	3,068 63	10. +25c.	4,353 40	1,284 77		7.6	8.2	
Georgetown ...	{Dom. 43,392	2,999 83	10. +10c.	4,660 80	1,660 97	2,030 36	6.9	7.2	
	{Com. 25,318	2,276 41	10. +10c.	2,645 80	369 39		8.9	8.0	
Mimico ...	{Dom. 105,884	5,748 44	8. +25c.	10,075 72	4,327 28	4,534 87	5.4	5.4	
	{Com. 6,551	346 49	8. +25c.	554 08	207 59		5.3	5.4	
Milton....	{Dom. 28,900	1,981 80	10. +10c.	2,890 00	908 00	3,159 22	6.8	7.6	
	{Com. 41,520	1,900 98	10. +10c.	4,152 00	2,251 02		4.6	5.4	
Seaforth..	{Dom. 43,162	2,593 70	8. +25c.	4,124 96	1,400 12	2,918 48	6.0	6.8	
	{Com. 48,840	2,724 84	8. +25c.	4,243 20	1,518 36		5.6	5.6	
Acton	{Dom. 29,079	1,931 11	10. +10c.	2,907 90	976 79	1,684 66	6.6	6.9	
	{Com. 24,336	1,725 73	10. +10c.	2,433 60	707 87		7.1	7.5	
New Hamburg...	{Dom. 37,913	1,888 04	10. +10c.	3,791 30	1,903 26	2,933 98	4.9	7.7	
	{Com. 23,041	1,273 38	10. +10c.	2,304 10	1,030 72		5.5	7.2	
Fergus ...	{Dom. 19,328	1,314 03	10. +25c.	2,374 80	1,060 77	2,750 26	6.8	....
	{Com. 37,844	2,367 91	10. +25c.	4,057 40	1,689 49		6.3	....
Norwich..	{Dom. 37,082	2,529 91	10. +15c.	4,291 60	1,761 69	3,421 50	6.8	5.4	
	{Com. 25,880	1,075 79	10. +15c.	2,735 60	1,659 81		4.2	6.4	
Elora.....	{Dom. 14,009	1,044 49	10. +25c.	1,625 90	581 41	1,475 44	7.4	....
	{Com. 25,431	1,820 07	10. +25c.	2,714 10	894 03		7.1	....
Simcoe* ..	{Dom. 5,227	351 67	.....	.....	.....	.....	6.7	....
	{Com. 26,852	1,386 89	.....	.....	.....		5.1	....
Caledonia*	{Dom. 5,618	265 62	.....	.....	.....	.....	4.7	5.2	
	{Com. 18,325	950 38	.....	.....	.....		5.2	5.2	
New Toronto*..	{Dom. 19,520	1,416 10	.....	.....	.....	.....	7.0	5.5	
	{Com. 7,972	685 22	.....	.....	.....		8.6	....
Waterford*...	{Dom. 6,753	546 08	.....	.....	.....	.....	8.1	....
	{Com. 23,213	1,172 85	.....	.....	.....		5.1	5.4	
Hagersville* ..	{Dom. 22,676	1,592 59	.....	.....	.....	.....	5.2	5.4	
	{Com. 28,610	1,698 40	.....	.....	.....		5.9	....
Winchester*	{Dom. 17,550	1,336 85	.....	.....	.....	.....	7.6	....
	{Com. 11,845	995 47	.....	.....	.....		8.4	9.9	
Stayner ..	{Dom. 13,725	933 55	.....	.....	.....	.....	6.8	6.7	
	{Com. 13,725	933 55	.....	.....	.....		6.8	6.7	

STATEMENT "F"—Concluded

Cost per Kw-hr. of Domestic and Commercial Light, including Floor Space and Installed Capacity Charges; and Estimated Saving in 1915 to Hydro Light Users of Ontario Municipalities from Rate Reductions due to Hydro Service

Municipality	Service	Consumption Kw-hr.	Total Cost	Old Rate Kw-hr.	Cost of Present Consumption at Old Rate	Saving in Year's Use	Total Saving	Net Cost per Kw-hr.	
								1915	1914
			\$ c.	\$ c.	\$ c.	\$ c.	\$ c.		
Pt. Credit*.	Dom.	36,484	1,975 29	.....	.....	.....	.....	5.4	6.0
	Com.	17,934	587 11	.....	.....	.....	.....	3.3	6.0
Ayr	Dom.	16,031	892 63	.....	.....	.....	.....	5.5	....
	Com.	9,477	773 08	.....	.....	.....	.....	8.1	....
Dutton	Dom.	3,970	318 85	.....	.....	.....	.....	8.0	....
	Com.	2,818	206 59	.....	.....	.....	.....	7.3	....
Chester-ville*....	Dom.	12,663	919 27	.....	.....	.....	.....	7.2	6.9
	Com.	12,104	1,187 54	.....	.....	.....	.....	9.8	7.7
Water-down*...	Dom.	18,017	1,202 41	.....	.....	.....	.....	6.7	7.9
	Com.	8,493	567 65	.....	.....	.....	.....	6.7	6.5
Elmvale*..	Dom.	7,728	704 12	.....	.....	.....	.....	9.1	9.9
	Com.	20,193	778 93	.....	.....	.....	.....	3.9	5.8
Baden*....	Dom.	12,729	938 33	.....	.....	.....	.....	7.4	10.0
	Com.			.....	.....	.....	.....
Bolton.....	Dom.	6,563	624 86	.....	.....	.....	.....	9.5	....
	Com.	7,298	553 80	.....	.....	.....	.....	7.6	....
Wood-bridge*..	Dom.	4,878	367 49	.....	.....	.....	.....	7.5	....
	Com.	4,911	443 53	.....	.....	.....	.....	9.0	....
Rockwood*..	Dom.	9,500	731 97	.....	.....	.....	.....	7.7	8.8
	Com.	3,300	251 27	.....	.....	.....	.....	7.7	8.8
Coldwater*..	Dom.	16,706	874 94	.....	.....	.....	.....	5.3	6.8
	Com.	13,686	703 35	.....	.....	.....	.....	5.1	5.7
Waubau-shene*...	Dom.	7,296	516 34	.....	.....	.....	.....	7.0	....
	Com.	2,979	220 50	.....	.....	.....	.....	7.8	....
Creemore...	Dom.	6,399	699 81	.....	.....	.....	.....	10.9	....
	Com.	7,653	937 84	.....	.....	.....	.....	12.2	....
Plattsville*	Dom.	6,061	551 39	.....	.....	.....	.....	9.1	....
	Com.	5,091	477 71	.....	.....	.....	.....	9.4	....
Beachville*..	Dom.	5,356	363 33	.....	.....	.....	.....	6.8	7.9
	Com.	4,847	296 37	.....	.....	.....	.....	6.1	7.9
Comber*...	Dom.	3,181	214 87	.....	.....	.....	.....	6.8	....
	Com.	3,497	274 49	.....	.....	.....	.....	7.8	....
Dorchester*	Dom.	6,840	579 23	.....	.....	.....	.....	8.5	....
	Com.	4,806	309 88	.....	.....	.....	.....	6.4	....
Lambeth*..	Dom.	2,981	344 47	.....	.....	.....	.....	11.5	....
	Com.	1,042	119 00	.....	.....	.....	.....	11.4	....
Port McNicoll*	Dom.	6,037	415 03	.....	.....	.....	.....	6.8	....
	Com.	6,542	311 20	.....	.....	.....	.....	4.7	....
Thames-ford....*	Dom.	6,676	574 34	.....	.....	.....	.....	8.6	10.9
	Com.	5,886	481 78	.....	.....	.....	.....	8.2	9.4
Thorndale.*	Dom.	2,816	299 37	.....	.....	.....	.....	10.6	7.8
	Com.	3,653	374 09	.....	.....	.....	.....	10.2	7.8

* No service prior to Hydro.

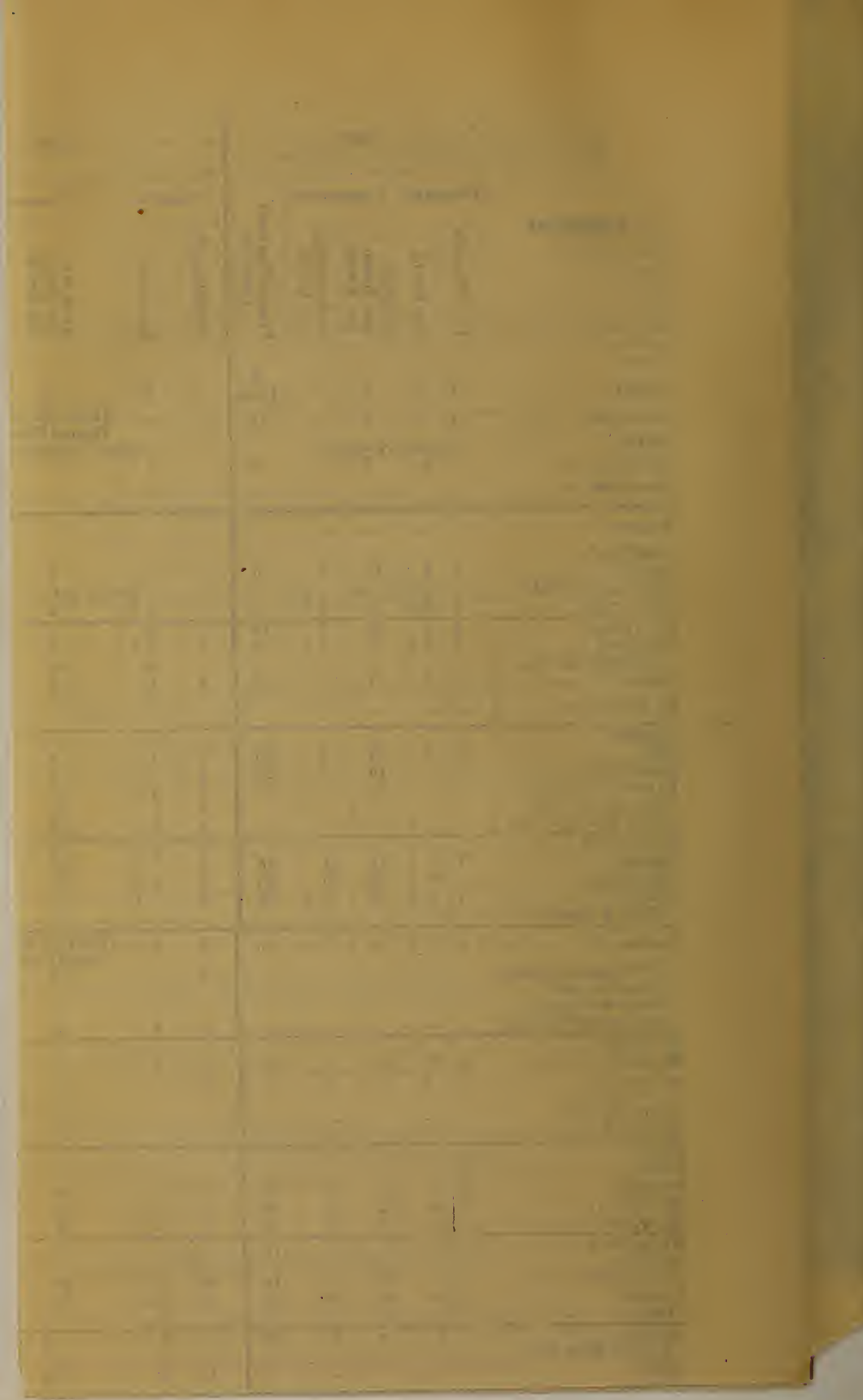
STATEMENT "G"

Power Rates in Municipalities

Municipality	Note	Cost of Power to Municipality per HP per Year					1912										1913					1914					1915					Suggested, 1916																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
		1912	1913	1914	1915	1916	Flat Rates		Differential Rates								1913	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
							1st 10 H.P. per H.P. per Year	All Add'l per H.P. per Year	1st 10 H.P. per H.P. per Year	All Add'l per H.P. per Year	1st 50 Hr. per Month per Kw-hr.	2nd 50 Hr. per Month per Kw-hr.	All Additional per Kw-hr.	Prompt Payment Discount	1st 50 Hr. per Month per Kw-hr.	2nd 50 Hr. per Month per Kw-hr.														All Additional per Kw-hr.	Prompt Payment Discount	1st 50 Hr. per Month per Kw-hr.	2nd 50 Hr. per Month per Kw-hr.	All Additional per Kw-hr.	Prompt Payment Discount	1st 50 Hr. per Month per Kw-hr.	2nd 50 Hr. per Month per Kw-hr.	All Additional per Kw-hr.	Prompt Payment Discount	1st 50 Hr. per Month per Kw-hr.	2nd 50 Hr. per Month per Kw-hr.	All Additional per Kw-hr.	Prompt Payment Discount	1st 50 Hr. per Month per Kw-hr.	2nd 50 Hr. per Month per Kw-hr.	All Additional per Kw-hr.	Prompt Payment Discount																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
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STATEMENT "H"
Lighting Rates in Municipalities

Municipality	1912					1913					1914					1915					Suggested 1916																								
	Domestic		Commercial		Prompt Payment Discount	Domestic		Commercial		Prompt Payment Discount	Domestic		Commercial		Prompt Payment Discount	Domestic		Commercial		Prompt Payment Discount	Domestic		Commercial		Prompt Payment Discount																				
	Per 100 Sq. Ft.	Per Kw-hr.	1st 30 Hr. per Month per Kw-hr.	All Additional per Kw-hr.		Per 100 Sq. Ft.	Per Kw-hr.	1st 30 Hr. per Month per Kw-hr.	All Additional per Kw-hr.		Per 100 Sq. Ft.	Per Kw-hr.	1st 30 Hr. per Month per Kw-hr.	All Additional per Kw-hr.		Per 100 Sq. Ft.	Per Kw-hr.	1st 30 Hr. per Month per Kw-hr.	All Additional per Kw-hr.		Per 100 Sq. Ft.	Per Kw-hr.	1st 30 Hr. per Month per Kw-hr.	All Additional per Kw-hr.		Per 100 Sq. Ft.	Per Kw-hr.	1st 30 Hr. per Month per Kw-hr.	All Additional per Kw-hr.																
Toronto	4	3	8	3	10-20	4	3	8	3	10-20	4	3	8	3	10-20	4	3	2.8	1.4	6	2.8	0.6	10	3	2	1	5	2.6	0.6	10															
Hamilton	4	3	8	3	10	4	3	{6-1st 25 hr. 3-next 75 hr.}	0.2	20	4	3	{6-1st 25 hr. 3-next 75 hr.}	0.2	20	4	3	2.5	1.25	5	1.5	0.15	10	3	2	1	4	1.6	0.15	10															
Ottawa	Special Schedule					Special Schedule					Special Schedule					Special Schedule					Special Schedule					Special Schedule																			
London	5	5	5	5	10	5	5	5	5	10	4	3	6	2.5	20	3	2	2.2	1.1	5	2.2	0.5	10	3	2	1	5	2	0.5	10															
Brantford	4	3	{6-1st 30 hr. 3-next 70 hr.}	0.15	10	4	3	{6-1st 30 hr. 3-next 70 hr.}	0.15	10	3	3	1.5	6	3	0.15	10	3	2.5	1.25	5	2.5	0.16	10	3	2.5	1.25	5	2.5	0.16	10														
Windsor	3	4	{8-1st 30 hr. 4-next 70 hr.}	0.8	10	3	4	{8-1st 30 hr. 4-next 70 hr.}	0.8	10	3	4	2	8	4	0.8	10	3	4	2	8	4	0.8	10	3	4	2	8	4	0.8	10														
Peterboro	6	5	12	5	10	4	4	8	4	10	4	4	8	4	10	4	4	8	4	10	4	10	4	4	8	4	10	4	10	4	10														
Berlin	Berlin rate + 10%					Berlin rate + 10%					Berlin rate + 10%					Berlin rate + 10%					Berlin rate + 10%					Berlin rate + 10%																			
Bridgeport, ext.	4	3.5	12	3.5	10	4	3.5	12	3.5	10	4	3.5	12	3.5	10	4	3.5	12	3.5	10	4	3.5	12	3.5	10	4	3.5	12	3.5	10	4	3.5	12	3.5	10										
Port Arthur	3	5	12	5	10	4	4	8	4	10	4	4	8	4	10	4	4	8	4	10	4	10	4	4	8	4	10	4	10	4	10	4	10												
St. Thomas	4	4.5	12	4.5	10	4	4.5	12	4.5	10	4	4.5	12	4.5	10	4	4.5	12	4.5	10	4	4.5	12	4.5	10	4	4.5	12	4.5	10	4	4.5	12	4.5	10										
Stratford	8	8	8	net	10	4	4	8	4	20	4	4	8	4	20	4	4	8	4	20	4	4	8	4	20	4	4	8	4	20	4	4	8	4	20										
Sebringville, ext.	4	4	4	4	10	4	4	4	4	10	4	4	4	4	10	4	4	4	4	10	4	4	4	4	10	4	4	4	4	10	4	4	4	4	10										
Guelph	4	4	4	4	10	4	4	4	4	10	4	4	4	4	10	4	4	4	4	10	4	4	4	4	10	4	4	4	4	10	4	4	4	4	10										
St. Catharines	4	3	{6-1st 30 hr. 3-next 70 hr.}	0.6	25	3	2.25	1.125	5	2.25	0.15	10	3	2.25	1.125	5	2.25	0.15	10	3	2.25	1.125	5	2.25	0.15	10	3	2.25	1.125	5	2.25	0.15	10	3	2.25	1.125	5	2.25	0.15	10					
Chatham	4	4	12	4	25	4	4	8	4	25	3	2.5	6	3	20	3	2.5	1.25	5	2.5	0.5	10	3	2	1	5	2	0.5	10	3	2	1	5	2	0.5	10									
Galt	4	4	12	4	25	4	4	8	4	25	3	2.5	6	3	20	3	2.5	1.25	5	2.5	0.5	10	3	2	1	5	2	0.5	10	3	2	1	5	2	0.5	10									
Woodstock	4	4	12	4	25	4	4	8	4	25	3	2.5	6	3	20	3	2.5	1.25	5	2.5	0.5	10	3	2	1	5	2	0.5	10	3	2	1	5	2	0.5	10									
Barrie	4	4	12	4	25	4	4	8	4	25	3	2.5	6	3	20	3	2.5	1.25	5	2.5	0.5	10	3	2	1	5	2	0.5	10	3	2	1	5	2	0.5	10									
Welland	4	4	12	4	25	4	4	8	4	25	3	2.5	6	3	20	3	2.5	1.25	5	2.5	0.5	10	3	2	1	5	2	0.5	10	3	2	1	5	2	0.5	10									
Port Robinson, ext.	4	4	12	4	25	4	4	8	4	25	3	2.5	6	3	20	3	2.5	1.25	5	2.5	0.5	10	3	2	1	5	2	0.5	10	3	2	1	5	2	0.5	10									
Collingwood	4	4	12	4	25	4	4	8	4	25	3	2.5	6	3	20	3	2.5	1.25	5	2.5	0.5	10	3	2	1	5	2	0.5	10	3	2	1	5	2	0.5	10									
Midland	4	4	12	4	25	4	4	8	4	25	3	2.5	6	3	20	3	2.5	1.25	5	2.5	0.5	10	3	2	1	5	2	0.5	10	3	2	1	5	2	0.5	10									
Ingersoll	4	4	12	4	25	4	4	8	4	25	3	2.5	6	3	20	3	2.5	1.25	5	2.5	0.5	10	3	2	1	5	2	0.5	10	3	2	1	5	2	0.5	10									
Preston	4	4	12	4	25	4	4	8	4	25	3	2.5	6	3	20	3	2.5	1.25	5	2.5	0.5	10	3	2	1	5	2	0.5	10	3	2	1	5	2	0.5	10									
Blair & Doon, ext.	4	4	12	4	25	4	4	8	4	25	3	2.5	6	3	20	3	2.5	1.25	5	2.5	0.5	10	3	2	1	5	2	0.5	10	3	2	1	5	2	0.5	10									
Dundas	4	3.5	10	3.5	10	4	3	{6-1st 25 hr. 3-next 75 hr.}	0.15	10	4	3	{6-1st 25 hr. 3-next 75 hr.}	0.15	10	3	2.5	1.25	5	2.5	0.15	10	3	2.5	1.25	5	2.5	0.15	10	3	2.5	1.25	5	2.5	0.15	10									
West Hamilton, ext.	4	4	4	4	10	4	4	4	4	10	4	4	4	4	10	4	4	4	4	10	4	4	4	4	10	4	4	4	4	10	4	4	4	4	10	4	4	4	4	10					
Ancaster, ext.	4	4	4	4	10	4	4	4	4	10	4	4	4	4	10	4	4	4	4	10	4	4	4	4	10	4	4	4	4	10	4	4	4	4	10	4	4	4	4	10					
Bullock's Corners and Greenville, ext.	4	4	4	4	10	4	4	4	4	10	4	4	4	4	10	4	4	4	4	10	4	4	4	4	10	4	4	4	4	10	4	4	4	4	10	4	4	4	4	10					
Goderich	4	4	12	4	10	4	4	8	4	20	4	4	8	4	20	4	4	8	4	20	4	4	8	4	20	4	4	8	4	20	4	4	8	4	20	4	4	8	4	20					
Waterloo	4	4	12	4	10	4	4	8	4	20	4	4	8	4	20	4	4	8	4	20	4	4	8	4	20	4	4	8	4	20	4	4	8	4	20	4	4	8	4	20					
Walkerville	3	4	{8-1st 30 hr. 4-next 70 hr.}	0.8	10	3	4	{8-1st 30 hr. 4-next 70 hr.}	0.8	10	3	4	2	8	4	0.8	10	3	4	2	8	4	0.8	10	3	4	2	8	4	0.8	10	3	4	2	8	4	0.8	10	3	4	2	8	4	0.8	10
Ford City, ext.	3	4	2	8	4	0.8	10	3	4	2	8	4	0.8	10	3	4	2	8	4	0.8	10	3	4	2	8	4	0.8	10	3	4	2	8	4	0.8	10	3	4	2	8	4	0.8	10			
Tecumseh, ext.	3	4	2	8	4	0.8	10	3	4	2	8																																		



MUNICIPAL ELECTRICAL INSPECTION

Electrical inspection throughout the Province of Ontario was, up to the last session of the Legislative Assembly of Ontario, carried on directly by the municipalities throughout the Province under the supervision of the Commission, requiring under such conditions, the appointment of inspectors by each municipality, such inspectors and other appointments being made by the municipal council in each case, subject to the approval of the Commission, and all such municipal inspection departments were, in turn, under the supervision of the Commission. Under this arrangement a considerable amount of time and expense was necessarily expended in the selection of inspectors, the passage of by-laws and other matters which had to be dealt with through the municipal councils. It also was very difficult to secure inspection in small surrounding municipalities, as it was necessary to bring about an understanding between each separate municipal council.

Under the old system there were some eighty municipalities under inspection, requiring almost as many inspectors. Many of these inspectors were local men holding positions in the electric light companies, all of which had to be corresponded with, called upon and otherwise kept under our supervision. During the session of 1915 a new Act was passed which empowered the Commission to take over the entire inspection system and appoint their own inspectors. Since then we have been able to carry on the work throughout the entire Province, with the exception of a few very remote sections, with less than fifty inspectors, and in place of eighty municipalities as before, we now have some 340 municipalities under careful and systematic inspection. The result of this arrangement is that the Commission is able to make such appointments as they deem advisable or necessary, and are also able to place any surrounding municipalities that can be reached from any one inspection district under the control of the nearest local inspector, and instead of the inspection fees being retained by the inspectors or the towns as was the case with the old system, all fees are now collected by the Commission. This has resulted very economically and satisfactorily.

In addition to the supervision of electrical inspection work, a system of approval of fittings and material has been instituted. Approval labels have been adopted in the case of new devices which have been manufactured to comply with the requirements of the Commission regarding protection of the public from fire or otherwise, which when affixed indicate to the general public and the inspectors in the different districts that such devices have been duly examined by the Commission and authority is thereby given to permit the use of such devices or material in installation work.

Appended hereto is a schedule showing the Inspection Districts throughout the Province. In the schedule is shown the name of the district in which an inspector has been appointed and the various municipalities and districts which are taken care of by the District Inspector thereof.

Under the present arrangement all inspectors are directly responsible to the Commission, to whom all matters pertaining to the interpretation of rules, all disputes between themselves, wire contractors and others, and the general manner of conducting their various districts, are referred to the Commission, tending to create a uniform interpretation of the Rules and Regulations and enabling the Commission to keep a more accurate and close supervision over their work.

The Rules and Regulations of the Commission have been carefully prepared and amended in such a way as to keep well in touch with changes and innovations in the way of electrical construction and all such demands and the general supervision of the Department have been promptly met and carefully supervised during the past year.

Inspection Districts

No.	District.	Towns in District.
1.	Windsor.....	Walkerville, Ford, Gordon, Tecumseh, Sandwich, Essex, Ojibway, Canard River, Maidstone, Amherstburg, Harrow, Kingsville, Cottam, Ruthven, Leamington, Wheatley, Stoney Point and Belle River.
2.	Chatham.....	Wallaceburg, Dresden, Comber, Tilbury, Blenheim, Ridgetown, Thamesville, Bothwell and Glencoe.
3.	Sarnia.....	Courtright, Oil Springs, Wyoming, Thedford, Forest, Alvinston, Arkona, Petrolia, Brigden and Pt. Edward.
4.	St. Thomas.....	Aylmer, Dutton, Pt. Stanley and Tillsonburg.
5.	London.....	Lambeth, Delaware, Komoka, Mt. Brydges, Strathroy, Ailsa Craig, Lucan, Byron, Thamesford, Westminster Gardens, Springbank, Broughdale, Thorndale, Dorchester, Belmont and Exeter.
6.	Woodstock.....	Beachville, Ingersoll, Embro, Ayr, Princeton and Drumbo.
7.	Brantford.....	Paris, Burford, St. George, Lynden and Plattsville.
8.	Hamilton.....	Burlington, Port Nelson, Clappison's Cor., Dundas, Aldershot, Waterdown, West Flamboro, Greensville, Grimsby, Beamsville, Bartonville, Ancaster, Chedoke, Winona, Stoney Creek, Grimsby Beach, Vineland, Freeman's Cor. and North Grimsby.
9.	St. Catharines.....	Port Weller, Niagara-on-the-Lake, Port Dalhousie, Grantham Twp., Thorold, Merrittton, Allenburg Vic., Louth Twp., Fonthill, Ridgeville, Fenwick, Electric Park, Port Colborne, Jordan, Jordan Station, Decew Falls.
10.	Toronto.....	Mt. Denis, Weston, Woodbridge, Lambton, Cooksville, Clarkson, Streetsville, Swansea, Mimico, New Toronto, Long Branch, Lorne Park, Port Credit, Agincourt.
11.	Guelph.....	Rockwood, Acton, Fergus, Elora and Elmira.
12.	Berlin.....	Waterloo, Preston, Galt, Baden, Hespeler, Breslau and Bridgeport.
13.	Stratford.....	Shakespeare, New Hamburg, Clinton, Tavistock, St. Mary's, Mitchell, Sebringville, Seaforth, Egmonville, Goderich, Milverton.

No. District.	Towns in District.
14. Aurora.....	Barrie, Allandale, Orillia, Coldwater, Wau- baushene, Victoria Harbor, Port Mc- Nichol, Midland, Penetang, Elmvale, Richmond Hill, Thornhill, Newmarket, Sutton, Roaches Pt., Orchard Beach, Kes- wick, Sharon and Queensville.
15. Peterboro.....	Lindsay, Omemee, Millbrook, Hastings, Nor- wood, Havelock, Lakefield.
16. Belleville.....	Trenton, Brighton, Colborne, Cobourg, Can- nifton, Corbyville, Madoc, Stirling, Hoard's Station, Campbellford, Frankford, Wel- lington, Picton, Marmora, Port Hope.
17. Kingston.....	Kingston Junc., Findley, Tweed, Gananoque, Collins' Bay, Napanee, Deseronto, New- burgh, Strathcona, Camden Eeast, Yarker, Tamworth, Marlbank, Larkins, Stocco, Sydenham, Portsmouth, Barriefield.
18. Simcoe.....	Waterford, Pt. Dover, Jarvis, Hagersville, Caledonia, Delhi, Tillsonburg, Norwich, Otterville.
19. Brockville.....	Prescott, Cardinal, Iroquois, Morrisburg, Cornwall, Perth, Chesterville, Winchester, Kemptville, Merrickville, Smith's Falls, Williamsburg, Westport, Aultsville, Far- ran's Point, Wales, Moulinette, Mille Roches, Lynedoch, Delta.
20. Ottawa.....	Almonte, Carleton Place, Eganville, Pem- broke, Arnprior, Renfrew.
21. Cobalt.....	
22. Niagara Falls.....	St. David's, Stamford, Port Robinson, Welland, Crowland, Bridgeburg, Ft. Erie, Ridgeway, Crystal Beach, Erie Beach, Crescent Beach, Thunder Bay or Prospect Bay.
23. Palmerston.....	Durham, Dundalk, Shelburne, Markdale, Flesherton, Mildmay, Chatsworth, Ches- ley, Hanover, Walkerton, Harriston, Lis- towel, Mt. Forest.
24. Thunder Bay.....	Port Arthur and Fort William.
25. Oshawa.....	Oshawa and vicinity.
26. Collingwood.....	Meaford, Thornbury, Stayner, Creemore, Clarksburg.
27. Cannington.....	Beaverton, Sunderland, Uxbridge, Stouff- ville, Markham, Woodville and Brechen.
28. Brampton.....	Brampton and Georgetown.
29. Bobcaygeon.....	Bobcaygeon and surrounding township.

MUNICIPAL RATES

The rate schedules adopted for this year by the municipalities contained certain changes in those for Domestic and Commercial service.

Domestic Service

The service rate was reduced from 4 cents per month per 100 square feet of floor area, to 3 cents.

Instead of the minimum service charge of 25 cents per month net, for all municipalities, it was made to vary with the size of the municipality, and was stated as based on certain amounts of floor area, being:—

In cities and towns, 1,000 square feet, or 30 cents per month.

In villages and police villages, 1,200 square feet, or 36 cents per month, and

In suburban districts, 1,500 square feet, or 45 cents per month.

A maximum service charge was adopted by all municipalities, being based on 3,000 square feet of floor area.

Formerly there was only one consumption or kilowatt hour rate for Domestic service. This year saw the inauguration of a second or follow-up rate for this class of service, being one-half of the first consumption rate. The first consumption rate corresponds to that formerly used for all energy taken. The application of these two rates is as follows:—

The first rate applies to all consumption up to 40 kilowatt hours per month for the first 1,000 square feet, plus 3 kilowatt hours for each additional 100 square feet of floor area charged, and

The second rate, to all remaining consumption.

All municipalities use a prompt payment discount of 10 per cent.

It is contemplated that at the beginning of the next municipal year, a further change will be made in the application of the two domestic consumption rates; that they be used in the following manner:—

The first rate is to apply to all consumption up to 3 kilowatt hours per month per 100 square feet of floor area charged, and

The second rate, to all remaining consumption.

Commercial Service

The former rate schedules for this class of service consisted of two consumption or kilowatt hour rates, the first applying to all energy taken up to the first 30 hours monthly use of the installed capacity, and the second to all remaining consumption. A third or follow-up rate was adopted, applying to all consumption remaining over 100 hours use per month of the installed capacity, making the second rate applicable only to that consumption between 30 and 100 hours monthly use. The first rate remains as in the former schedules.

The rate schedules for Commercial service, then, consist of three consumption or kilowatt hour rates used in the following manner:—

The first rate applies to all consumption up to the first 30 hours monthly use of the installed capacity.

The second, to all additional consumption up to the next 70 hours monthly use, and

The third, to all remaining consumption.

A prompt payment discount of 10 per cent. is deducted in all municipalities.

There are no changes contemplated in the form of the rate schedules for commercial service for the coming year.

Power and Street Lighting Service

The systems of charge for Power service and for Street Lighting have retained the same forms as described in previous reports.

The following changes will be embodied in the power rate schedules for 1916:—

The present power rate schedules have consumption rates holding approximately the same ratio for any cost of power. With this form there are comparatively high rates for the consumption in excess of 100 hours use per month where the cost of power is high. The result of this is that after the consumption has exceeded 100 hours use per month, the total bill per horse power continues to increase at a comparatively high rate, making the bills of consumers having high load factors prohibitive. To overcome this difficulty, the third consumption rate will not exceed 0.15 cents per kilowatt hour. With the schedules revised in this manner, the increase in the consumers' bills after the consumption has passed 100 hours use per month will be at a very slow rate, and the total bill cannot become excessive.

It will be noted that in some of the power rate schedules as high as 25 per cent. is deducted as prompt payment discount. Should a consumer neglect to pay his bill on time, the amount deducted is recharged. In such cases the penalty is much too great. It has, therefore, been deemed advisable to adjust the rate schedules to use a 10 per cent. prompt payment discount in all cases. In municipalities where a greater discount is necessary, two discounts will be used, the first being a local discount, and the second of 10 per cent. for prompt payment. The local discount will be made so that with it and that for prompt payment the desired reduction from the base rate will be obtained. Only the prompt payment discount will be recharged when the consumer neglects to pay his bill on time.

A revised edition of the "Standard Interpretations of Rates" has been drawn up. These will be published and circulated among the municipalities in the near future.

Municipal Rates—Continued

1915

Municipality	Cost of Power to Municipality per H.P. per year	Lighting Rates						Power Rates					Street Lighting
		Domestic			Commercial			Per H.P. per month	1st 50 Hr. per month Kw-hr.	2nd 50 hr. per month per Kw-hr.	All additional per Kw-hr.	Prompt payment discount	
		(See note a.)			(See note b.)								
		Per 100 sq.ft.	Per Kw-hr.	Per Kw-hr.	1st 30 hr. per Kw-hr.	Next 70 hr. per Kw-hr.	All additional Kw-hr.						
Guelph	\$ c. 21 00	c. 3	c. 2.25	c. 1.125	c. 5	c. 2.25	c. 0.5	\$ c. 1 00	c. 2.0	c. 1.5	c. 0.2	% 25 and 10	9.00 per 100-w. Incan.
Hagersville...	33 21	3	4.5	2.25	9	4.5	0.9	1 00	3.9	2.6	0.3	10	12.00 " "
Hamilton.....	15 00	3	2.5	1.25	5	1.5	0.15	1 00	1.6	1.0	0.15	25 and 10	8.00 " " 13.75 250-w. 50.00 500-w. Inc. on Stan.
Hespeler	23 00	3	4	2	8	4	0.8	1 00	3.0	2.0	0.25	10	12.00 100-w. Incan.
Humber Bay..	{ Served by Mimico }	3	5	2.5	10	5	1	1 00	3.6	2.4	0.3	10	16.00 " "
Ingersoll		3	3.5	2.75	7	3.5	0.7	1 00	2.8	1.8	0.2	10 and 10	11.50 " "
Lambeth.....		3	6	3	12	6	1.2	1 00	5.4	3.6	0.4	10	11.00 80-w. " "
London		3	2	1	5	2	0.5	1 00	2.5	1.7	0.2	10 and 10	11.00 75-w. " "
Lucan	47 74	3	6	3	12	6	1.2	1 00	5.4	3.6	0.4	10	11.85 100-w. Inc. on Stan.* 15.00 100-w Incan.
Midland	19 37	3	2.5	1.25	5	2.5	0.5	1 00	1.7	1.1	0.17	10	10.00 " "
Milton	28 00	3	3.5	1.75	7	3.5	0.7	1 00	2.5	1.7	0.2	10	40.00 750-w.
Mimico.....	28 00	3	3.5	1.75	7	3.5	0.7	1 00	3.3	2.2	0.3	10	11.00 100-w. " "
Mitchell	37 00	3	4	2	8	4	0.8	1 00	4.2	2.8	0.3	10	14.00 " "
Mount Brydges	46 56	3	6	3	12	6	1.2	1 00	5.4	3.6	0.4	10	14.00 " "
New Hamburg	32 00	3	3.5	1.75	7	3.5	0.7	1 00	3.8	2.5	0.3	10 and 10	9.00 " "
New Toronto..	28 00	3	4	2	8	4	0.8	1 00	3	2	0.25	10	12.00 " "
Norwich.....	32 00	3	3.5	1.75	7	3.5	0.7	1 00	3	2	0.25	10	11.00 " " 60-w.
Ottawa.....	14 00	3	2.2	1.1	5	2.2	0.5	1 00	1.8	1.2	0.15	15 & 10	9.00 100-w. " "
Paris	21 00	3	3.5	1.75	7	3.5	0.7	1 00	2.5	1.7	0.2	10	45.00 Arc 100-w. " "
Penetang	26 50	3	3	1.5	6	3	0.6	1 00	1.7	1.1	0.15	10	12.00 100-w. " "

Peterboro'	18 00	3	2.5	1.25	5	2.5	0.5	10	1 00	1.3	0.8	0.1	10 & 10	{ 9.00 50.00 50.50	" Arc Arc on Stand.
Petersburg and St. Agatha...	49 27	3	6	3	12	6	1.2	10	1 00	5.1	3.4	0.4	10	{ 5.00 8.30 100-w. Incan.	" 60-w. 100-w.
Plattsville....		3	6	3	12	6	1.2	10	1 00	6.2	4.1	0.5	10	{ 11.00 10.00 12.00	" " " " " " "
Port Arthur...	22 71	4	2.5	1.5	6	6	2.5	10	1 00	2	1.3	0.15	10	{ 11.00 11.00 12.00	" " " " " " "
Port Credit...	28 00	3	3.5	1.75	7	3.5	0.7	10	1 00	3	2	0.25	10	{ 11.00 10.00 12.00	" " " " " " "
Port Dalhousie	22 49	3	4	2	9	4	0.8	10	1 00	2.1	1.4	0.2	10	{ 11.00 10.00 12.00	" " " " " " "
P't McMcNicoll	35 00	3	4.5	2.25	9	4.5	0.9	10	1 00	3.6	2.4	0.3	10	{ 11.00 11.00 12.00	" " " " " " "
Port Robinson	{ Served by } { Welland }	3	3	1.5	6	3	0.6	10	1 00	1.8	1.2	0.15	10	{ 11.00 11.00 12.00	" " " " " " "
Port Stanley..	50 90	3	4.5	2.25	9	4.5	0.9	10	1 00	5	3	0.4	10	{ 15.00 15.00 15.00	" " " " " " "
Prescott.....	28 67	3	4	2	8	4	0.8	10	1 00	2.8	1.8	0.2	10	{ 11.00 12.00 17.00	" 60-w. 100-w.
Preston.....	21 00	3	3	1.5	6	3	0.6	10	1 00	2.3	1.6	0.2	20 & 10	{ 11.00 12.00 17.00	" 60-w. 100-w.
Princeton.....	65 95	3	7	3.5	14	7	1.4	10	1 00	7.8	5.2	0.6	10	{ 12.00 12.00 12.00	" " " " " " "
Rockwood	38 00	3	4.5	2.25	9	4.5	0.9	10	1 00	4.7	3.1	0.4	10 & 10	{ 15.00 15.00 15.00	" " " " " " "
Seaforth	40 00	3	4	2	8	4	0.8	10	1 00	4.3	2.9	0.4	10	{ 12.00 12.00 12.00	" 75-w. 75-w.
Sebringville ..	{ Served by } { Stratford }	3	5	2.5	10	5	1	10	1 00	5.4	3.6	0.4	10	{ 14.00 14.00 38.00	" " " " " " "
Simcoe.....	35 00	3	5	2.5	10	5	1	10	1 00	4.2	2.8	0.3	10	{ 300-w. Standard 100-w. Incan.	" 300-w. Standard
St. Catharines	14 23	3	2.25	1.125	5	2.25	0.15	10	1 00	1.8	1.2	0.15	25	{ 8.00 15.00 13.00	" " " " " " "
St. George.....	38 78	3	5	2.5	10	5	1	10	1 00	4.2	2.8	0.3	10	{ 25.00 25.00 25.00	" 250-w. 50-w.
St. Mary's....	29 50	3	4.5	2.25	9	4.5	0.9	10	1 00	3.6	2.4	0.3	10	{ 9.00 10.00 40.00	" 50-w. 75-w.
St. Thomas....	28 00	3	2	1	5	2	0.5	10	1 00	2.5	1.7	0.2	10 & 10	{ 40.00 55.00 100-w.	" Arc. 100-w.
Stayner	37 82	3	4.5	2.25	9	4.5	0.9	10	1 00	4.2	2.8	0.3	10	{ 12.00 60-w. 75-w.	" 60-w. 75-w.
Stratford	30 00	3	3	1.5	6	3	0.6	10	1 00	3.3	2.2	0.3	10	{ 40.00 45.00 50.00	" 500-w. 500-w.
Strathroy.....	44 07	3	6	3	12	6	1.2	10	1 00	3.8	2.6	0.3	10	{ 15.00 24.00 175-w.	" Standard 100-w. Incan.
Sunderland....	82 68	3	6	3	12	6	1.2	10	1 00	4.5	3.0	0.4	10	{ 15.00 13.00 13.00	" 100-w. 100-w.

Municipal Rates.—Continued.

1915

Municipality	Cost of Power to Municipality per H.P. per Year	Lighting Rates					Power Rates					Street Lighting	
		Domestic		Commercial			Per H.P. per month	1st 50 hr. per month Kw-hr.	2nd 50 hr. per month Kw-hr.	All additional per Kw-hr.	Prompt payment discount		
		Per 100 sq. ft.	Per Kw-hr. (See note a)	Per Kw-hr. (note b)	1st 30 hr. per Kw-hr.	Next 70 hr. per Kw-hr.							All additional Kw-hr.
	\$ c.	c.	c.	c.	c.	c.	%	\$ c.	c.	c.	%	\$ c.	
Tecumseh	{ Served by } { Walkerville }	3	5	5	10	5	5	10	1.00	5.6	3.8	10	12.00 100-w. Incan.
Thamesford ..	45 00	3	5	2.5	10	5	1	10	1.00	5.6	3.8	10	14.00
Thamesville ..	45 40	3	6	3	12	6	1.2	10	1.00	4.5	3.0	10	17.00
Thorndale	45 00	3	6	3	12	6	1.2	10	1.00	3.8	2.5	10	11.00
Tilbury	39 45	3	5	2.5	10	5	1	10	1.00	3.8	2.5	10	
Tillsonburg . . .	32 00	3	3.5	1.75	7	3.5	0.7	10	{ 1.35 1st 10h.p. 1.00 all add'l }	1.5	1	20	8.00
Toronto	15 00	3	2.8	1.4	6	2.8	0.6	10					
Victoria Harbor	35 00	3	4.5	2.25	9	4.5	0.9	10	1.00	3.9	2.6	10	12.00
Walkerville . . .	38 00	3	4	2	8	4	0.8	10	1.00	3.6	2.4	10	5.60
Wallaceburg ..	38 45	3	5	2.5	10	5	1	10	1.00	4.2	2.8	10	{ 13.50 30.00 }
Waterdown	26 00	3	4.5	2.25	9	4.5	0.9	10	1.00	3.5	2.4	10	400-w. Incan. per 100-w. Incan.
Waterford	39 00	3	5	2.5	10	5	1	10	1.00	4.5	3.0	10	14.00
Waterloo	22 50	3	3	1.5	6	3	0.6	10	1.00	2.5	1.7	25 & 10	{ 8.75 100-w. mnl. or 75-w. series Incan. 100-w. ser. Incan. 10.00 150-w. mnl. " 10.50 3-lt. Standard 25.00 1-100-w. & 2-60-w. 5-lt. Standard 40.00 1-100-w. & 4-60-w. 12.00 100-w. Incan. " 9.00 250-w. " 18.00 }
Waubashene .	35 00	3	4.5	2.25	9	4.5	0.9	10	1.00	3.6	2.4	10	12.00
Welland	14 25	3	2.25	1.125	5	2.25	0.15	10	1.00	1.8	1.2	25	{ 9.00 " 18.00 }

Served by { Dundas }	3	4	2	8	4	0.8	10	1 00	2.8	1.8	0.2	10	14.00 { 12.00 40.00 }	100-w. Incan. " 4-100-w. " on Standard 100-w. Incan. " " on Standard* 500-w. Incan. on Standard* 100-w. 60 or 100-w. Incan. 250-w. Incan. 100-w. "
West Hamilton														
Weston.....	30 00	3	3	1.5	6	3	10	1 00	3	2	0.2	10	{ 12.00 40.00 }	"
Williamsburg.	25 09	3	5	2.5	10	5	10	1 00	4.2	2.8	0.3	10	15.00	100-w. Incan.
Winchester ..	39 54	3	4	2	8	4	10	1 00	3.1	2	0.25	10	{ 12.00 12.00 }	"
Windsor.....	38 00	3	4	2	8	4	10	1 00	3.6	2.4	0.3	10	{ 50.00 13.00 }	on Standard* 500-w. Incan. on Standard* 100-w. 60 or 100-w. Incan. 250-w. Incan. 100-w. "
Woodbridge...	33 83	3	4.5	2.25	9	4.5	10	1 00	3.9	2.6	0.3	10	13.00	100-w.
Woodstock ...	23 00	3	2.5	1.25	5	2.5	10	1 00	2	1.5	0.2	10 and 10	{ 10.00 25.00 }	60 or 100-w. Incan. 250-w. Incan.
Woodville	70 24	3	6	3	12	6	10	1 00	4.5	3	0.4	10	13.00	100-w. "

NOTE (a).—For the first 40 kw. hrs., per month for the first 1,000 sq. ft., and 3 kw. hrs. for each additional 100 sq. ft. of floor area charged.
 (b).—For all remaining consumption.

* Brackets or standards installed as local improvements.

MUNICIPAL PURCHASES AND SALES

The municipal electrical enterprises in Ontario require in the aggregate large quantities of poles, line wire, cross arms, insulators, transformers, house service meters and of everything needed for the construction and maintenance of their various projects.

This demand, can in a measure, be filled by individual municipal purchase, but this is not always satisfactory. Owing to the wide range in the variety of materials and in the requirements, the municipal officials may lack the equipment necessary to properly safeguard their interests, and may not know exactly what should be used and where it can be obtained to the best advantage. The requirements of an individual town are comparatively limited. It cannot always afford large quantities and accordingly has to pay higher prices. At times rush orders may be placed for urgently needed material, which through lack of provision, may not be in stock. For these and other reasons individual effort of this kind often means through lack of co-operation the more or less indiscriminate purchase of smaller quantities at higher prices, and the absence of an effective means of control which would tend to standardize quality and efficiency.

If the large requirements of the municipalities as a whole were combined and centralized, there would be created a purchasing agency which could control the various commercial conditions so that each municipality could obtain its comparatively smaller requirements under the favorable conditions attending competitive wholesale purchase.

To give practical effect to this centralized purchasing idea the Commission maintains a Purchasing Department whose services are offered to any municipality or Provincial institution in Ontario, whether connected with the Hydro system or not.

During the past year we have been buying for one hundred and thirty-two municipalities. Their total requirements, of over \$500,000, have enabled us to obtain for them at prices lower than those previously available all of the many items required in the extension of their various projects. On transformers, lamps, watt-hour meters and rubber covered wire we have been able to effect savings of from five to fifty per cent. over the prices previously paid. These are only a few of the economies effected, but will serve to show what can be done by co-operation.

A feature of this centralized service to which attention should be directed is the possibility of intelligent discrimination. Low cost is important, but it should not be the only consideration. It is necessary to know that the article purchased represents good value for the money. We have on our staff men who are experts on the many materials and processes which enter into the make-up of the various items used. In addition, we have complete equipment for standardizing and testing. Full use of these resources is made by our Purchasing Department, so that it is in a position to know that the materials recommended represent the best values obtainable. We call attention to this as we have appreciated that such complete facilities are seldom available to the individual towns, and we want to make it perfectly clear that this service has been organized for their benefit and is available for the asking.

The reduction in Hydro rates has greatly enlarged the possibilities of electric service in the household and on the farm, and the sales of irons, air heaters, motors, and all of the many other utilities, have been greatly increased.

To assist the municipal officials in the promotion of this revenue producing business the Sales Department made a careful investigation of the merchandising conditions, and as a guide in formulating campaigns complete data was secured of the methods adopted by the leading electrical companies. This information has been condensed and is available for municipal use. A number of the municipalities have availed themselves of this service and have found that the broad gauged, progressive policies outlined have enabled them to show a very substantial increase in their sales of utilities.

In building up this business they have been further assisted by definite advertising campaigns, from which gratifying results have already been derived.

The services of the Sales and Advertising Department are freely offered to any of the municipalities in Ontario, and information in connection with this subject will be gladly given upon request.

RURAL POWER

Waterloo Township

USES ON A GROUP OF FARMS

In July, 1914, a group of seven men, six in the Township and one in the Town of Waterloo, having decided that they wanted electric service to their places, made arrangements whereby a syndicate outfit could be used and a line was built to their places as noted in our report of last year.

This outfit having been in use for more than a year, the Commission submits in the attached report, itemized by months, the uses for domestic and power purposes, under the heading of "domestic" and under the heading of "power," the sum of results being tabulated under the different headings, including service charge and the total for each farm, the average cost per k.w.h., including all charges, being indicated in the table below.

On page 232 is noted the work done at each of the farms, No. 1 to 6. The records were not kept in shape so that it could be reduced to cost per unit of work done, but the figures shown indicate the amount of value received from the uses of the large power outfit for the amount paid.

The rate that is in force in this township is along the lines of the new standard that is being considered by the Commission. The domestic uses at these places consists of lighting of the house, barns, buildings, the use of an electric iron in every case and of a washing machine in four places. In the latter part of August at two of the places pumping motors were installed.

Two services have been run to each farm, one to the domestic transformers, from which the secondary is run to the different buildings, and the other being a 2,200 volt service for the use of the syndicate outfit, this service in each case terminating at a point so that it is only necessary to use 75 feet of portable cable to connect the portable transformers with the motor.

The syndicate outfit that is being used at these farms is the 20 horse power one built for them and described in last year's report, the motor being of the standard induction type with auto starter mounted in one waggon, the transformers with a standard 3 phase meter being mounted in another waggon, both waggons being of the steel wheel farm type, on each of which was built an oak foundation and floor and covered with a bow top, weatherproof canvas curtains being provided so that the whole could be enclosed and so arranged that, in case of weather bothering while threshing or filling silos, they could be adjusted at an angle so as to provide protection for the equipment, and at the same time permit of the ingress and egress of air.

Waterloo Township Syndicate

Uses of power for Domestic and Power purposes for the year 1915.

Rate—Service Charge \$30.00. Power 4c. per K.W.H.

Discount 10% for prompt payment from power only

Farm number.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	—
							K.W.H.						Total K.W.H.
1	48	35	28	33	21	17	20	30	33	38	59	47	409
2	48	31	23	23	29	55	17	19	25	36	51	54	411
3	39	49	33	18	10	10	13	12	19	23	36	33	295
4	31	27	21	23	14	15	16	15	20	38	56	43	319
5	31	26	23	18	12	12	10	15	21	23	35	27	253
6	45	17	13	12	6	6	7	13	15	16	7	25	182
7						On Town System							.....
													1,869
	Power used by 20 HP. Syndicate Outfit.												
1	73	.....	.....	34	.....	.....	.....	283	.....	153	30	648	1,221
2	58	.....	42	26	59	32	12	131	192	185	745	88	1,570
3	67	.....	51	42	10	19	.....	89	289	228	267	457	1,519
4	76	.....	71	.....	.....	.....	26	107	134	.....	363	52	829
5	65	.....	.....	49	20	.....	.....	51	245	.....	312	68	810
6	.....	.....	.....	.....	.....	.....	.....	.....	193	114	21	549	77
7	.....	.....	.....	.....	.....	.....	.....	260	.....	117	.....	.....	38 77
													7,203
													9,072

Farm Number	Service Charge.	Consumption Charge.		Total Charges.	Average Cost per K.W.H.
		Domestic.	Power.		
	\$ c.	\$ c.	\$ c.	\$ c.	
1.....	31 66	14 72	43 96	90 34	5.542
2.....	30 00	14 80	56 52	101 32	5.114
3.....	30 00	10 62	54 62	99 30	5.48
4.....	31 66	10 48	29 84	71 98	6.27
5.....	30 00	9 11	29 16	68 27	6.42
6.....	30 00	6 55	31 57	68 12	6.528
7.....	9 00		13 57	22 57	6.

NOTE.—No. 1 and No. 4 now pay an extra service of \$5.00 per year from September 1st to December 30th.

For record of detail of work done see next page.

Waterloo Township Syndicate

WORK DONE BY 20 HORSEPOWER OUTFIT

No. 1 Farm

Silo filling	A 12 ft. x 42 ft. silo was filled, 40 ft. settled.
Threshing	2,000 bushels mixed grain.
	800 " wheat.
	300 " barley.
Sawed	15 cords (stove length) wood.
Chopped	2,000 bushels grain.
	(600 " " was chopped in January, 1916.)

No. 2 Farm

Silo filling	A 14 ft. x 39 ft. silo was filled, 36 ft. settled.
Threshing	1,120 bushels wheat.
	1,500 " mixed grain.
	450 " barley.
	1,000 " oats.
Sawed	12 to 15 cords (stove length) wood.
Chopped	2,400 bushels grain.

No. 3 Farm

Silo filling	A 12 ft. x 40 ft. silo was filled and settled and refilled.
Threshing	900 bushels wheat.
	1,800 " oats.
	1,500 " mixed grain.
	500 " barley.
Sawed	12 cords (stove length) wood.
Chopped	3,000 bushels grain.
	(800 " " chopped in January, 1916.)

No. 4 Farm

Silo filling	Two silos were filled—one 10 ft. x 22 ft. and one 8 ft. x 22 ft.
	Both were filled full.
Threshing	300 bushels wheat.
	1,600 " oats.
Sawed	(Probably wood sawed, but we have no record of it.)
Chopped	1,000 bushels grain.

No. 5 Farm

Silo filling	An 11 ft. x 30 ft. silo was filled and settled.
Threshing	325 bushels wheat.
	1,550 " oats and mixed grain.
Sawed	16 cords wood (stove length).
Chopped	1,100 bushels of grain.

No. 6 Farm

Silo filling	A 14 ft. x 40 ft. silo was filled, 24 ft. settled.
Threshing	700 bushels wheat.
	2,000 " mixed grain.
	300 " barley.
Sawed	10 cords (stove length) wood.
Chopped	1½ day—about 300 bushels grain.

ORNAMENTAL STREET LIGHTING

The demand for better street lighting is growing rapidly. As heretofore, the supply of Hydro power to a municipality is invariably accompanied by an improvement in the street lighting. In addition, however, the decreasing cost of power and the introduction of equipment more efficient and more pleasing to the eye, has resulted in a higher standard of illumination for all municipal thoroughfares.

New designs have been developed in lighting standards, brackets, fixtures and glassware, and in other details less in evidence but of much importance.

The gas filled incandescent lamp is superseding all other types for street lighting purposes. The behaviour of this lamp in service is very satisfactory, as shown in the results obtained in many installations, some of which have been in operation for more than a year.

These lamps have required radical changes in the design of fixtures and the latter have been improved with the experience gained under operating conditions.

Improvements have been made by the manufacturers in the glassware supplied, obtaining better characteristics in diffusion and absorption.

A close study is being made of various new and important developments and further advances will be made during the coming year.

Regarding individual installations, the type placed in St. Thomas is worthy of remark. This system of combination lighting and railway poles with single wire overhead feed to the lamps on a series circuit stands out as the best method of clearing the street of wooden poles and providing a White Way at minimum cost.

In residential street lighting, Windsor has established a remarkable record, having placed in operation, to date, for this class of lighting alone, 1,226 ornamental standards which are fed by 52 miles of underground cable.

Chatham

One hundred and seventy-nine ornamental standards were installed, with underground conduit and cable, on three classes of streets, viz.: main business streets, main thoroughfares other than business streets and residential streets. Three types of standards were used, having the same general outlines, but varying in height and in general dimensions with the class of street and the candlepower of the lamp used.

The cost of the installation was \$23,676, which is assessed against the property owners on the local improvement plan.

The system was put into operation on July 7, 1915.

Renfrew

Work was commenced on the new street lighting system on May 3rd, and completed on July 28th, 1915.

The arc lamps, operated by a private company, were discontinued and the new system supplied with current from the municipal power plant.

Forty ornamental standards were erected on the main street with underground cables, and 297 bracket lights were used to illuminate the other streets.

Two hundred and thirty-four wood poles were erected and attachments were also made to 304 foreign poles to carry the overhead circuits.

Constant current transformers of total capacity 64 k.w. were installed.

The cost of this system was \$15,700.

St. Thomas

One hundred and six combination lighting and railway poles were supplied to this municipality with lighting brackets designed especially for the St. Thomas White Way.

A gas-filled lamp of 750 c.p. was mounted on each pole and the feed to the lamps was supplied by a single No. 6 gauge W.P. wire strung from pole to pole.

Current was turned on officially on April 20th, 1915.

Seven additional units were installed in October, 1915.

All overhead line construction for service to buildings is being removed from Talbot Street.

Simcoe

An installation of 27 ornamental standards was completed in March, 1915. Gas-filled lamps of 400 c.p. were used. Steel tape armored cable was laid in the ground to supply current to the lamps.

The cost of the installation was \$3,096.

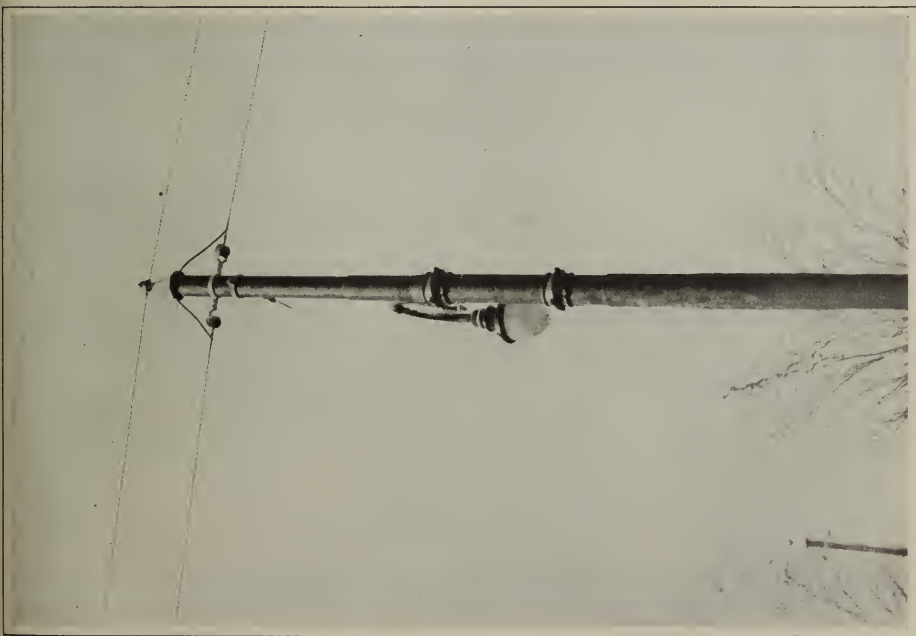
Windsor

Extensions to the street lighting have been made during the year.

There are now 1,496 ornamental standards in operation for which there has been installed 59 miles of underground cable.

Many other municipalities were assisted in various ways, in some cases being given general information pertaining to street lighting, and in other cases specific recommendations, including estimates and plans. Assistance was also given in the choice of equipment and in the purchase of same. The municipalities listed below have availed themselves of this service: Berlin, Chesley, Dresden, Guelph, Kincardine, Kingston, Listowel, London, Midland, North Bay, Peterboro, St. Catharines, St. Mary's, Stratford, Wallaceburg.

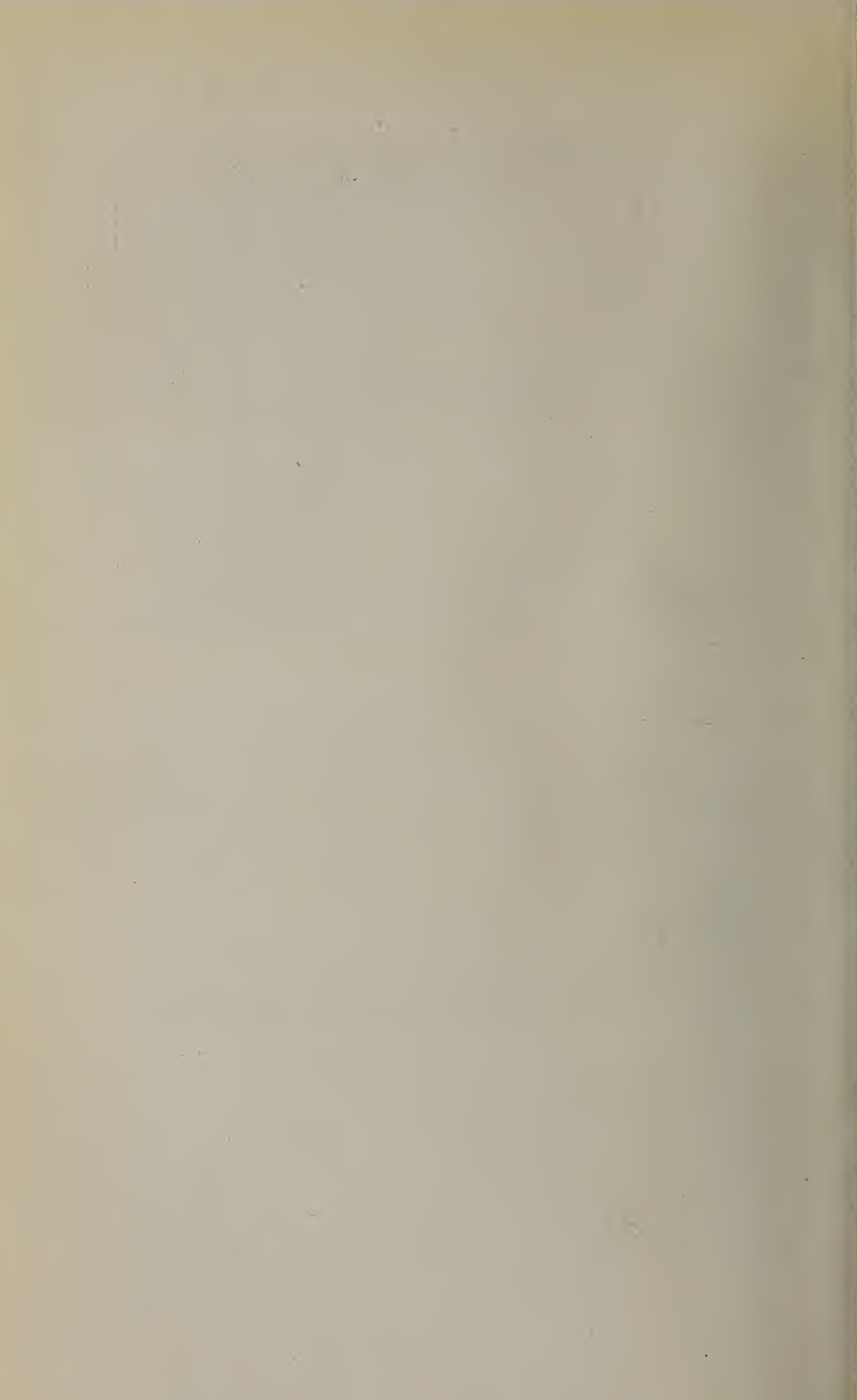
Recommendations are now being prepared for white way systems for the following municipalities: Blenheim, Exeter, Ingersoll, Petrolea, Ridgetown.



St. Thomas White Way—Overhead Line, with Return Wire

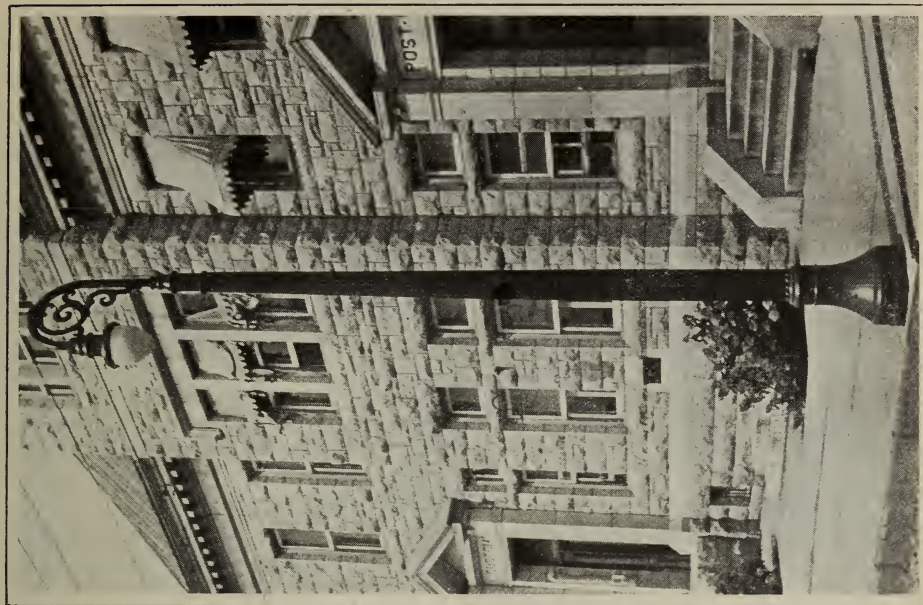


St. Thomas White Way—Combination Railway and Lighting Pole

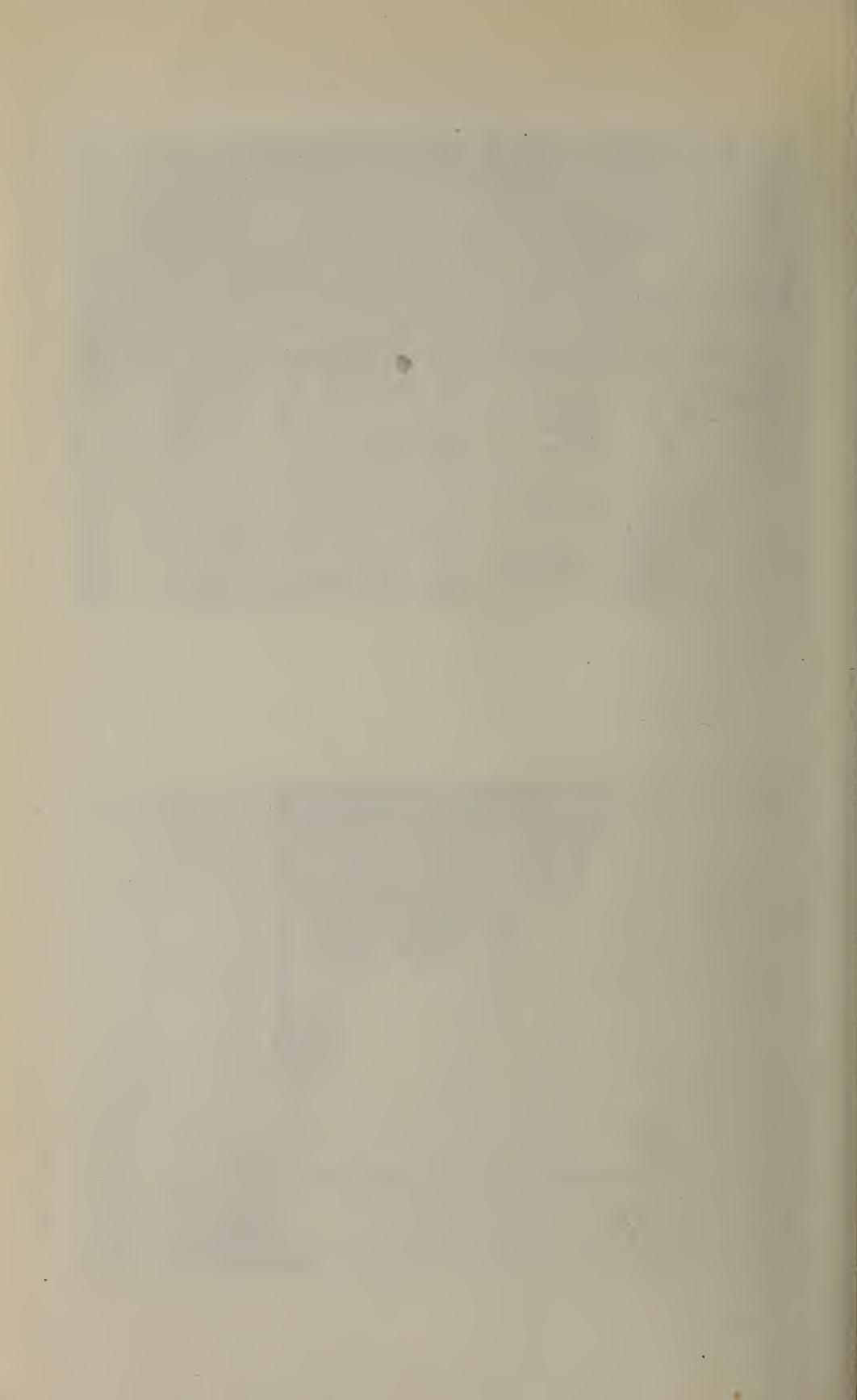




Renfrew White Way—Concrete Lighting Standard



Renfrew White Way—Cast Iron Lighting Standard



MUNICIPAL UNDERGROUND CONSTRUCTION

Hamilton

Throughout the period of construction careful records were made of the cost of the joint underground conduit system.

On the completion of the construction work an equitable distribution of the cost was made amongst the companies interested, viz.: Hamilton Cataract Power, Light & Traction Co., The Hamilton Hydro-Electric Department, The C. P. R. Telegraph Co., and the G. N. W. Telegraph Co.

Reports were prepared dealing with certain claims for compensation on the part of the Hamilton Cataract Co. against the municipality of Hamilton.

Berlin

Designs were drawn up for an underground feeder conduit line leading out of the substation now in course of erection.

The duct run and manholes will be constructed by the local Water and Light Commission, the material for which has been purchased through the Hydro-Electric Power Commission.

Owen Sound

A report was made to the Gas and Electric Commission on a proposed underground conduit line on Queen Street.

Kingston

A report was made to the Civic Utilities Commission on the cost of the underground distribution system already installed.

London

A report was made to the Public Utilities Commission which contained information in regard to the construction of a joint underground conduit system and other matters relative thereto.

Reports were also prepared which pertained to underground conduit construction in Ottawa and Toronto.

Submarine cables and cable terminals were purchased under the Commission's specifications for Chatham, Kingston and Wallaceburg.

ELECTRIC RAILWAY PROJECTS

After the passing of the amended Hydro-Electric Railway Act in 1914, there were a number of requests from municipalities for a new clause allowing certain districts of a township to promote and construct lines through their own section of the township without affecting the remaining portion of the municipality. Complying with this request a new Act was passed in March of this year which provides for this contingency. The new Act also gives the Commission power to purchase existing electric railways by inserting proper clauses in the agreement between the Commission and the municipalities affected.

During the year requests for reports and estimates on proposed lines have been received from time to time, and the total number of municipalities that have applied since the first Act was passed to date is now as follows:—

Townships, 158; villages, 47; towns, 46; cities, 15; police villages, 8; miscellaneous committees, Boards of Trade, etc., 7; a total of 281 resolutions.

It has been necessary to maintain two parties in the field constantly making preliminary surveys and gathering traffic statistics, which information is used in preparing estimates of the cost of construction and equipment and also estimates of the probable revenue that will be obtained in the event of the lines being constructed. To date preliminary surveys have been made and estimates prepared on the cost of constructing approximately 2,000 miles of line. A considerable portion of this mileage is in the nature of alternative routes.

Delegates of councils and ratepayers from the municipalities in various sections of the Province have appeared before the Commission a number of times during the year for the purpose of bringing to the attention of the Commission the particular needs of these districts. The result of these meetings has been that the engineers are advised before entering the field of the particular requirements of the district under survey, which allows the engineering party to perform their work in a more intelligent manner than would be possible if they were not provided with such information.

Standards and Specifications

The work commenced in 1913 of preparing standard plans and specifications for roadbed construction was continued, and this data is now available for use in the event of construction of any of the lines, so that tenders may be called for with as little delay as possible.

A great deal of time and thought was expended in preparing these plans, and the standards of the prominent roads in both Canada and the United States, as well as recommendations of the various railway societies, were carefully studied before decisions were reached.

Before the specifications and plans could be prepared for rolling stock and equipment, as well as the sub-stations, it was necessary to select a system of electrification. During the last eight or ten years there has been considerable discussion between the most prominent engineers in the United States and Canada on this subject and opinions have been divided between the 1,500-V. direct-current system and the high-tension single-phase alternating current system. However, during the last four or five years there has been a distinct movement in favor of the first of these two systems for purely interurban railways. The chief reason in favor of this system is that the equipment is lighter, cheaper and more standard, as well as being cheaper to maintain and being able to operate over existing 600-volt city lines.

The chief advantage of the single-phase system is found in the fact that sub-stations may be placed at greater intervals and the overhead system can be designed much cheaper.

The Commission, after considering the subject for a year or more, decided that the proposed Ontario system should be constructed on the 1,500 and 3,000 volt direct current system.

The various manufacturing firms in Canada, United States and Europe placed their expert engineers at the service of the Commission and tenders and specifications, with discussions, were forwarded for consideration. A number of more prominent interurban roads in the United States were visited and the officers interviewed as to their opinions on this very important question, and the Commission believes that the decision which has been reached will allow of a considerable saving in the cost of equipping the various lines due to the fact that a standard form of apparatus may be used.

The centre entrance type of car has been used in recent years on some prominent lines in the States, chiefly for the reason that it gives greater seating capacity for the same length of car, and is also a more pleasant car to ride in, due to better separation of the smoking, baggage and main passenger compartments. Sample specifications of such cars with discussions were forwarded to the Commission by the more prominent car manufacturing companies in both Canada and the United States, and it appeared that there were such great differences in the design of cars of the same length and seating capacity that the planning of these cars was not carried out in a proper manner. Expert opinion was therefore obtained and a decision was reached that the centre entrance type of car was impracticable for the proposed Ontario lines, chiefly from the standpoint of safety.

A properly designed steel car, provided with a vestibule, has been demonstrated as being the safest type of car to ride in, inasmuch as the vestibule can be designed to collapse when in collision so that the main framing of the car itself will be able to withstand the strains in a satisfactory manner.

Specifications and plans were therefore prepared for a modern 60-foot, three-compartment steel car.

Projects

General:

The table below gives a record of the various surveys that have been made to date:—

Work Order.	Line.	Preliminary Survey.
E. R. 3	Toronto-North Eastern	295.00 miles
4	Kingston-Cornwall	115.00 "
5	Barrie-C.P.R.	8.20 "
6	Huron County	222.20 "
7	Guelph, Georgian Bay East Line	226.62 "
8	London-Lambton County	126.78 "
9	London-Stratford	52.27 "
10	Guelph-Hespeler	10.00 "
12	Berlin-Woodstock	31.00 "
13	Guelph-Hamilton	35.00 "
15	London-Port Stanley	24.05 "
16	St. Marys-Exeter	19.84 "
20	St. Thomas-Aylmer	11.30 "

Work Order.	Line.	Preliminary Survey.
21	London-Aylmer	18.50 Miles.
22	Hamilton-Galt	35.00 "
23	Lyons-Tillsonburg	17.00 "
24	Guelph-Orangeville	33.00 "
26	Aylmer-Port Burwell	15.00 "
27	Drumbo-Linwood	31.20 "
28	Tillsonburg-Woodstock	23.00 "
29	Hamilton-St. Catharines	32.10 "
30	Hamilton-Welland	40.00 "
33	St. Catharines-Queenston	8.10 "
34	Dunnville-Beamsville	24.00 "
35	Welland-Port Colborne	7.10 "
36	Port Colborne-Bridgeburg	20.00 "
38	Port Credit-Hamilton	28.00 "
40	Port Colborne-Dunnville	22.50 "
42	Listowel-Fullarton	31.74 "
47	Dresden-Strathroy	37.90 "
48	Arkona-Grand Bend	23.00 "
49	Wingham-Chesley	43.50 "
50	Flesherton-Collingwood	32.64 "
51	Guelph-Port Credit	19.40 "
55	Toronto-Port Credit	8.00 "
56	Guelph-Berlin	31.50 "
57	Berlin-Stratford	66.50 "
59	St. Catharines-Pelham Township	11.00 "
60	Welland-St. Catharines	10.00 "
61	Newmarket-Barrie	37.00 "
62	Barrie-Midhurst	6.00 "
63	Chelsea-Green Spur London	2.50 "
64	Collingwood-Midhurst	26.00 "
65	Ottawa-Morrisburg	51.80 "
66	Penetanguishene-Midhurst	52.50 "
68	Dunnville-Simcoe	32.00 "
69	Baysville District	73.40 "
70	Hamilton-Port Dover	36.00 "
		<hr/>
		2164.14 "

Toronto-Northeastern District:

Early in the year eleven municipalities in this district forwarded signed copies of an agreement with the Commission to provide for the construction and operation of some eighty miles of line.

Goderich-Kincardine District:

Acting on a request from the municipalities interested in the West Shore Railway, the Commission prepared estimates showing the cost of completing the road and operating it by electric or gasoline power.

Aylmer District :

Early in the year a report was sent to the municipalities in this district showing that a line from Westminster Junction on the London and Port Stanley Railway could be built through Belmont to Aylmer with connection to Springfield, Brownsville and Tillsonburg, and operated as a paying proposition.

The municipalities have this report under consideration.

London and Port Stanley Railway :

Engineering assistance was given the London Railway Commission and our standards and specifications for the construction of proposed Ontario Radials were used in calling for tenders and in carrying out the work of reconstruction of this road.

Engineers were loaned the London Railway Commission to supervise the work and to order material.

New 80 lb. steel rails were installed with new ties and ballast; the culverts and station buildings were repaired, and on completion of this work and receipt of electric equipment, the Pere Marquette ceased to operate the road and electric service was given under the management of the London Railway Commission.

In addition to the above work our standard specifications for electrical equipment of sub-stations, overhead, bonding and car equipments were used in procuring tenders from the various electrical manufacturing companies for the supply of the necessary equipment. On receipt of the tenders a recommendation was forwarded to the London Railway Commission and contracts were signed with the Canadian Westinghouse Company for the supply of sub-station apparatus, and with the Canadian General Electric Company for the supply of equipment for cars and locomotives.

It was found that we could procure our own overhead construction material at more advantageous prices by having it manufactured in various Canadian plants and assembled by our workmen on the L. & P. S.

Our standard specifications for car bodies and trucks were also used to secure tenders on such material, and recommendations were forwarded to London with these standards.

After the contracts for cars, locomotives and equipment were signed by the London Railway Commission we also supervised the manufacture and installation of this apparatus, and the result was that the road was duly opened on July 1st and has given very satisfactory service to date in spite of very unfavorable circumstances existing during this year.

TORONTO STOREHOUSE

As mentioned in previous reports, the handling of line material, electrical appliances, etc., has been centralized in a storehouse located at Toronto. Since its establishment in 1913, the amount of material handled by the storehouse has steadily increased in volume, and it was necessary to provide additional storage space early this year. The shipments from the storehouse include line hardware of all kinds, insulators, station and line equipment, lamps, heaters, toasters, irons, etc. In addition there are handled miscellaneous supplies such as camp equipment, scrap wire, tools, etc.

Due to extensive advertising campaigns among the municipalities, the sale of lamps and electrical appliances has assumed larger proportions than in previous years, and a large stock is necessary to meet the demand made upon these classes of goods.

The storehouse and laboratories being located in the same building, it is possible to test materials received with a minimum of expense for handling. This feature facilitates the quick delivery of goods from the storehouse.

TESTING AND RESEARCH LABORATORIES

The work of the laboratories falls under two main heads:—

1. Tests and investigations on materials and apparatus received in the storehouse on stock orders, or submitted to the laboratories by the various departments of the Commission or by outside parties.

2. Tests and investigations relating to problems arising in the operation of the system.

The first may be called the routine work of the laboratories, and includes the testing of samples of materials and apparatus submitted to the Commission for purchase, and the investigation of types of apparatus and materials submitted for approval to the Electrical Inspections Department and turned over to the laboratories for investigation and report. This work includes a great variety of tests, and is described in greater detail below.

The second main division of the work of the laboratories may be designated as "Industrial Research." It includes the investigation of engineering problems which arise in the course of the operation of the system, the solution of which requires research work which can best be carried on in the laboratories. These problems are in the main common to all large power systems, and the solution of those peculiar to any system is of assistance to the engineering profession in general. Those engaging our attention deal with such subjects as the insulation of high-voltage lines, the protection of the system from electrical disturbances, special problems relating to the metering of electrical energy, problems in photometry arising from the introduction of new types of lamps, and others of a varied nature.

The organization of the laboratories has been described in a previous report. The work of each division is described in detail below:—

High Tension and General Testing Laboratory

Descriptions of the testing equipment and laboratory apparatus of this department have been printed in the annual reports of 1913 and 1914. Sufficient here to state that our equipment is continually increasing by perfecting and adding to the original equipment and by the installation of new apparatus.

A great variety of tests is performed in this department with apparatus available for the purpose or for which special apparatus is constructed in our laboratory machine shop. The larger proportion of these tests is made for the Purchasing Department of the Commission, to determine the relative merits of the materials used by the Commission and the municipalities supplied by them and purchased from the manufacturers. In this way the Commission and municipalities are insured against the purchase of inferior goods. Other tests are carried on with the idea of making helpful suggestions to the manufacturer tending toward the ultimate improvement of the articles in question. In many instances this has led to changes in the design by manufacturers, with marked improvement of product.

Following is a partial list of the different classes of tests performed during the past year, together with some photographs illustrating same.

Mechanical and electrical tests on high-voltage insulators of the suspension type and pin type for any commercial voltage; tests on line entrance, switch and transformer bushings, either of the porcelain or of the built-up type; mechanical and electrical tests on bus insulators, guy-strain insulators, etc.

Tests to determine mechanical and electrical properties of electrical transmission cable and ground cable.

Cable clamps are tested for holding power and for electrical conductivity.

Tests on switches: these include tests on pole-top air-break switches used on our 13,000- and 45,000-volt lines; motor starters; circuit breakers; fuses for all potentials up to 15,000 volts; cutouts and, in fact, on protective devices in general.

Power and lighting transformers and constant-current series lighting transformers. These are tested to determine their efficiency, exciting current, regulation, heating and excellence of construction.

Electricians' and linemen's rubber gloves: tests on this particular line of electrical supplies have resulted in a wonderful improvement in product and increased care in the manner of rating with respect to the voltage of the lines which may be safely handled with a given glove.

All the line hardware receives careful tests to determine mechanical strength, quality of material and general suitability. This testing is largely done in the laboratory or under its supervision. Tests were recently made to determine the holding power of guy anchors under actual service conditions. Samples of all shipments of galvanized material are tested for galvanizing before being accepted by the Commission. At the same time, quality and workmanship are carefully noted, and, when necessary, criticisms are made.

Among tests of a more special nature may be mentioned tests to determine relative heat insulating properties of construction materials and tests to determine the co-efficient of expansion with temperature rise of porcelain and various metals and alloys.

A well-equipped laboratory is maintained for the testing of Portland cement, sand and coarse aggregate for concrete. Tests on cement are carried out according to the specifications of the Canadian Society of Civil Engineers, and cover the following:—

1. Fineness.
2. Time of setting.
3. Tensile strength.
4. Soundness or constancy of volume.

Any sample failing to pass test or which gives a doubtful test is at once given a check test, reserve cement for such contingency being labelled and stored at the time the sample is received at the laboratory.

Meter and Standards Laboratory

The work of the Meter Department has continued to increase in volume and variety, each addition to the equipment making possible a large number of useful tests or investigations which would otherwise be impossible.

The problem of obtaining a uniform basis of standardization has been energetically pursued, and frequent checks have been made with the Dominion Government standards at Ottawa. There is now on order a complete set of laboratory standards which, when installed, will by means of standard cells and resistances, be checked directly against the international standards, thus enabling the laboratory to maintain accurate standards for electrical measurement. In connection with this, the matter of determining the constants of instrument transformers has been investigated, and apparatus constructed whereby these values may be determined with great accuracy. During the year a number of portable instruments has been added to the laboratory equipment, and by means of these the solution of metering problems, both for the Commission and its customers, has been greatly facilitated.

A comparison, according to the specifications adopted for acceptance tests of watt hour meters, has been made on a number of the most recent types of meters, instruments of the following makes having been tested:—

Canadian General Electric	Packard
Chamberlain and Hookham	Siemens
Duncan	Canadian Westinghouse

All points, both mechanical and electrical, of these meters have been examined in detail, compared with results of previous investigations, and listed in such a way as to give comparative values of the meters in the form of percentages of an assumed ideal meter.

The Government inspection of meters for Toronto district has been continued in the laboratory, and a large number of new instruments have received the seal of the Department of Inland Revenue, arriving at their destination ready to be installed.

The exchange of meters between municipalities who, taking Hydro power, must change their frequency, has assumed considerable proportions, and large numbers of instruments sent in have been cleaned, overhauled, sometimes re-lagged, and, where possible, Government inspected for reinstallation on new systems. In this way many meters which would otherwise have been a direct loss to their owners have been given a renewed lease of life and are probably good for five or more years of service. These meters represent a great variety of makes, ranging from the most modern to some long since obsolete. Among them may be named the following meters:—

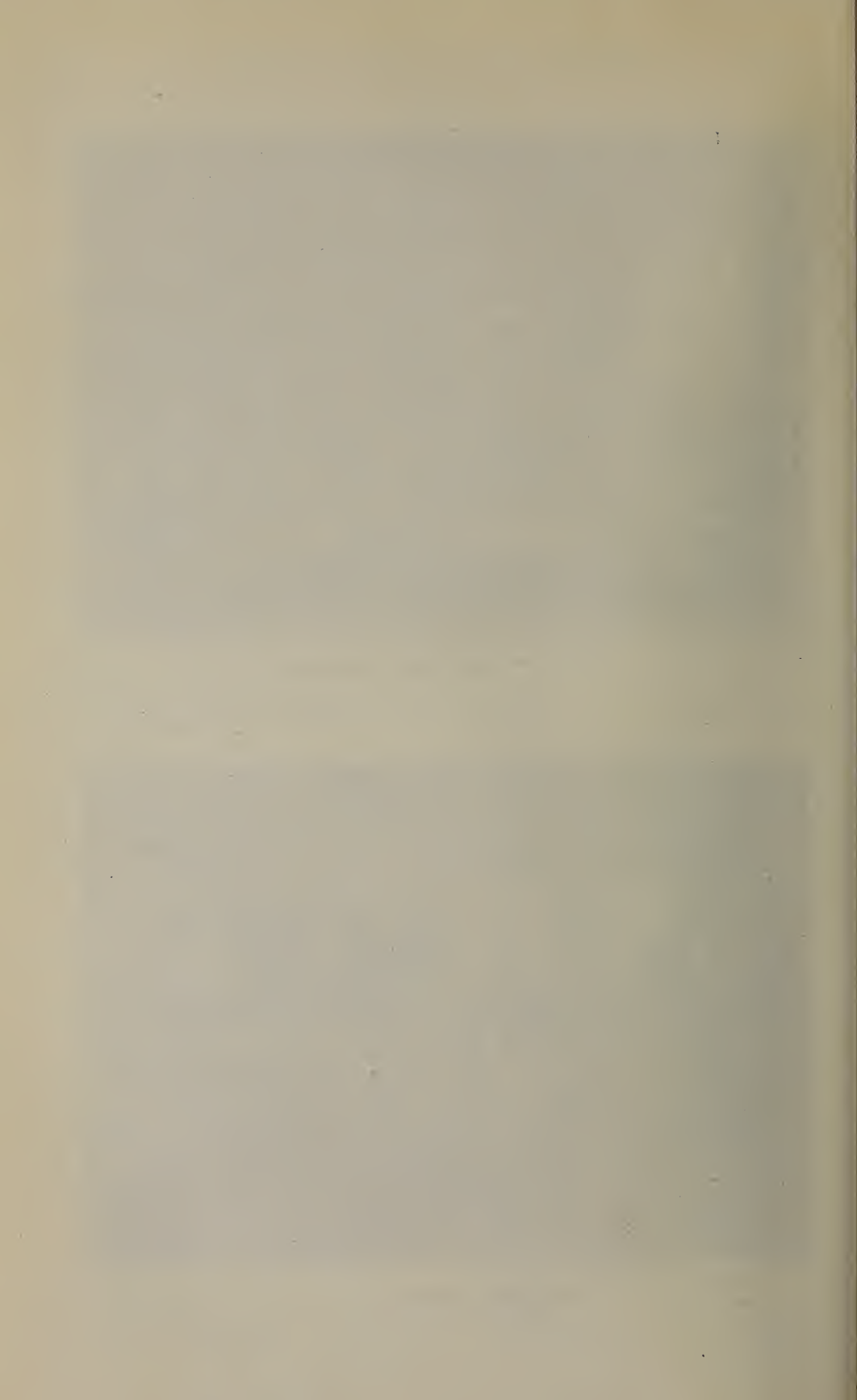
Bergmann	Packard (new type)
Canadian General (Thompson)	Peterborough
Chamberlain & Hookham	Sangamo (Gutmann)
Ferranti	Sangamo (mercury motor)
Fort Wayne	Siemens
Packard (Schaeffer)	Westinghouse.



Meter Test Board.—Meter Laboratory



Photographic Laboratory



There have also been a number of cases where disputed and defective watt hour meters and instrument transformers have been sent in, their trouble diagnosed and rectified.

Detailed investigations and experiments have been carried out in the measurement of excess loads and integrated demands, meters for both quantities having been constructed and tried out. In addition to the Commission's own experimental models, a number of instruments submitted by manufacturers were examined and reported upon. The only suitable instrument on the market for the measurement of excess power, (i.e., energy consumed in excess of a certain pre-determined "firm power,") was unfortunately of foreign manufacture, and efforts are being made to replace this meter at a reasonable price by one of home manufacture. The measurement of integrated demand presents, on the other hand, the difficulty of obtaining a definition suitable for embodiment in contracts of the quality measured by the meter. A number of demand meters are on the market, measuring according to one definition or another; none of them, however, giving the true value. To make possible the use of maximum demand meters, and the embodiment in power contracts of results obtained from their indications, the following definition has been suggested: "Maximum demand shall be defined to be the indication of an instrument so calibrated that when any constant load in watts (within its capacity) is passed through it, for an interval of time coincident with the period established by the instrument, it shall at the end of the time interval indicate that load." The above definition is sufficiently broad to include all the successful demand meters now on the market.

Among the tests performed by this department may be mentioned those on electric cooking stoves, with particular attention to oven characteristics. Curves were made of temperatures and energy consumption, and from these curves were calculated the comparative costs of doing various classes of cooking. It may, however, be mentioned that, owing to the low price at which Hydro power may be obtained, the cost of energy was not the only point considered, but that a careful study was made of all mechanical features with regard to safety, appearance, convenience, durability, etc. The following makes of stoves were submitted for test:—

Hughes
Moffatt
National

Ogden
Westinghouse (Copeman)
McClary Mfg. Co.

Besides the work of standardizing and testing, that of repairing old apparatus and developing new has gone on continuously. Among the repair work may be mentioned:—Meggers, meters of all kinds, relays, small motors and instrument transformers. The development work included special testing apparatus and meters, protective and regulating relays, instrument transformers, load banks, rheostats, etc.

Other tests which have been made include station relays, water heaters, low resistance measurements, wire connectors, street lighting relays, time switches, graphic meters, sad irons, electric railway signal apparatus, telephone equipment, and power plant protective apparatus.

Lamp Laboratory

The policy of the Commission of supplying to the municipalities only lamps of approved quality demands that close attention be paid to all lamps received for stock. The methods of testing and inspection prescribed by the specifications

are closely followed. The result of such inspection is that the quality of lamps is maintained at a high standard, and complaints from users are very few in number. All cases of unsatisfactory performance of lamps in service are investigated with the object of determining the causes and providing against their recurrence as far as is possible. By keeping in close touch with the manufacturers, all questions regarding the performance of lamps are adjusted with little delay. Experience has shown that the requirements of the different municipalities have taken definite form, permitting a better proportioning of the various classes of lamps comprising the stock. Gas-filled lamps are becoming better known and are being used in ever increasing quantities. Some alterations in the design of these lamps have been made, tending to eliminate what were formerly weak features of construction. The trend of development is toward greater uniformity of design amongst the different manufacturers. Gas-filled street series lamps have entirely replaced the vacuum series lamps and are rapidly replacing all arc lamps except the most improved, luminous arc, type. Many reports of favourable performances of gas-filled lamps for street lighting have been received from different municipalities. Several municipalities have sent samples of lamps for life test which have been submitted to them by agents. These, along with the routine life-testing of stock lamps, have kept the life-test racks going continuously at practically full capacity.

The ever-increasing efficiency of lamps and the attendant decreased cost of light has resulted in a more liberal use of light. The tendency is toward the use of higher powered units. The number of applications of light from incandescent lamps is steadily increasing.

Carbon lamps are practically obsolete. Some new tungsten lamps have been placed on the market. Among them are concentrated filament lamps of 25 and 40 watts capacity, and the 60 watt gas-filled lamp.

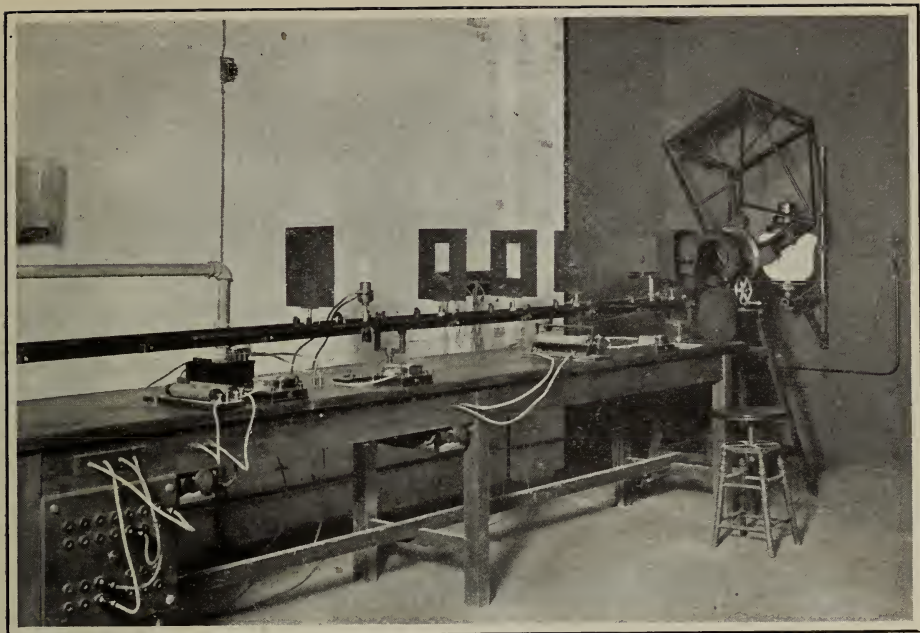
Some necessary additions have been made to the metering equipment of the lamp laboratory, and an experimental integrating sphere has been fitted up for the testing of small filament lamps of both vacuum and gas-filled types.

Illumination Laboratory

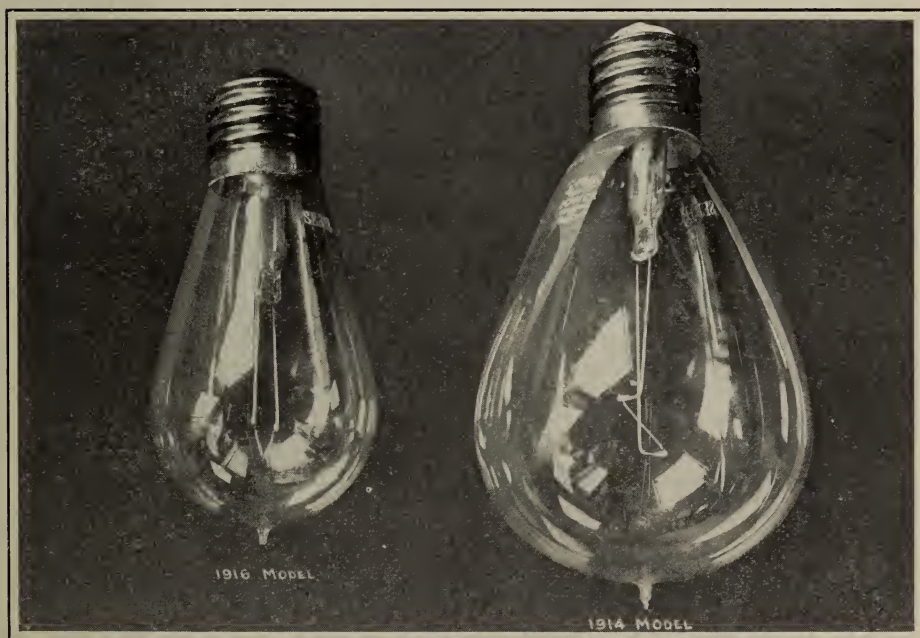
The Illuminating Engineering Department of the laboratory has endeavoured to keep pace with the advance in the science of illumination. More and more importance is being placed on illumination, which has necessitated a broadening of the scope of this department. A large number of investigations have been conducted to furnish data and information to various departments of the Commission and to some private enterprises.

A series of tests was made on several headlights that were submitted for use on the London & Port Stanley Electric Railroad. These were tested for angular spread of beam and distribution of intensity across the beam; also the effect produced by changing the position of the lamp relative to the reflector and the use of different styles of lamps. These tests furnished valuable information which assisted in a selection of the most suitable headlight for the purpose.

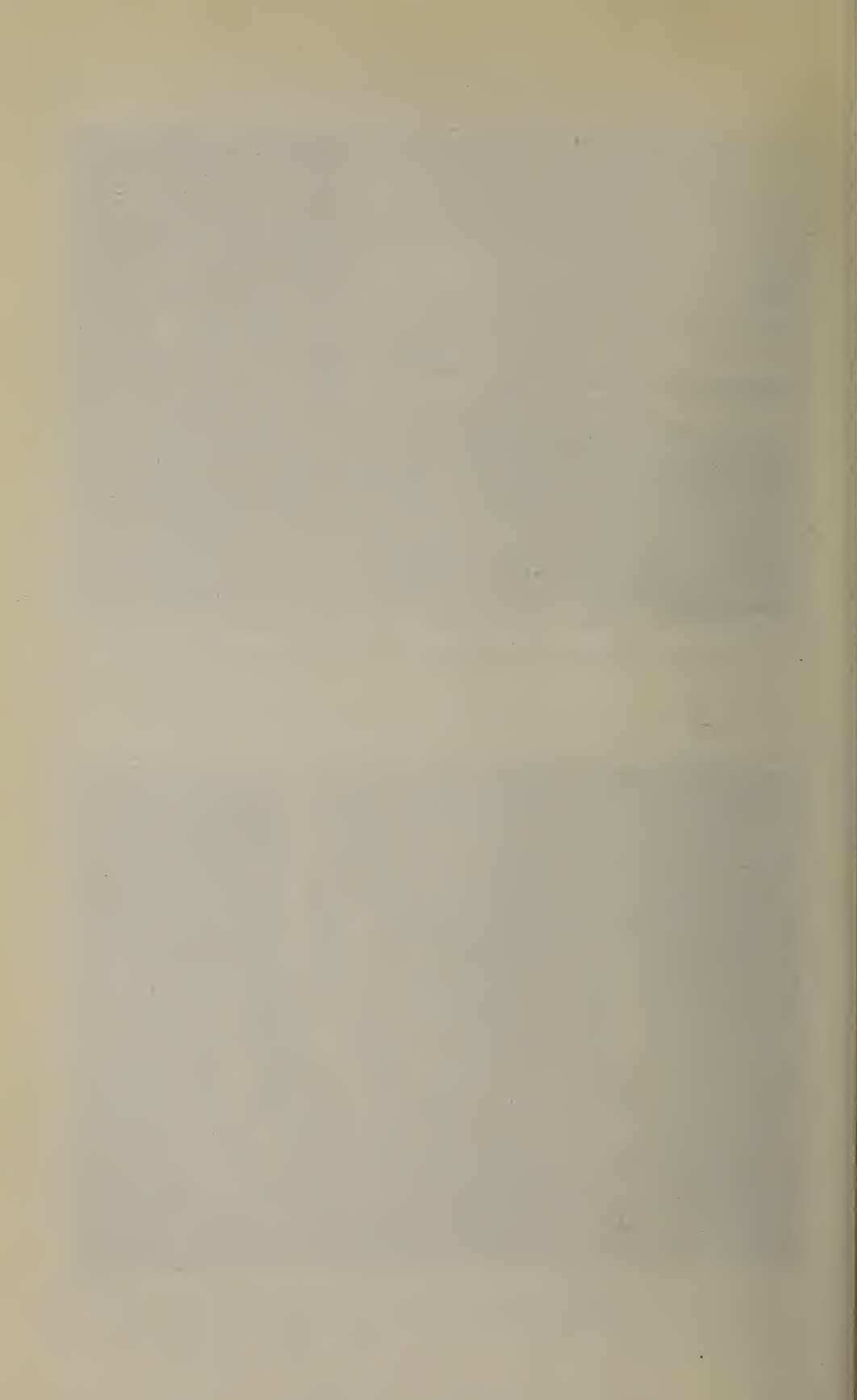
The use of gas-filled lamps for show windows involves a fire risk which it is necessary to keep within reasonable limits. With this end in view, a test was made under conditions approximating those in the average show window to determine the conditions resulting from the use of gas-filled lamps. Data secured from these tests, along with heat radiation tests at different parts of lamps, enabled



Photometer in Illuminating Laboratory, showing Distribution Head



Showing Development in Series Gas-Filled Lamps



the inspection department to impose limits for the use of gas-filled lamps beyond which it is not advisable to go.

The question of liability to failure of gas-filled lamps for street lighting during rain or sleet storms has also received attention. Rain conditions were produced in the laboratory and lamps of different makes were subjected to tests while unprotected from the full effect of the downpour.

Interior illumination has been investigated in connection with the requirements of the new office building on University Avenue. A suitable room was selected and fitted up for use as a test room. A preliminary illumination survey was made with different sizes of lamps to determine the most suitable size to meet the requirements, after which complete tests were made on ten fixtures of different styles, under similar conditions, and the results reduced to a common basis of comparison. Much valuable data was thus obtained, and the various characteristics of the different fixtures were compared. Photos were made to show the general appearance and diffusing qualities of the glassware.

Some installations of street lighting involving new ideas and apparatus were tested, and the results tabulated for future reference when new installations are to be planned.

The laboratory distribution photometer has been completed, and the laboratory is in a position to undertake more varied and extensive tests than before. The illustrations show the general construction of this photometer. The track is twenty feet long, and at one end is the distribution head which enables candle power measurements to be made at any direction in a vertical plane while the unit under test is stationary and held in its normal position. Its construction enables it to be used also as a precision photometer when desired. The photometer is suitable for testing either upright or pendant fixtures or arc lamps. A large number of various types of glassware and reflectors have been tested since its completion.

The above-mentioned tests are a few of those that have been conducted throughout the year. The laboratory is equipped for making practically every test that is required of an illumination laboratory, such as illumination surveys both inside and outside, acceptance tests on opaque reflectors and reflecting and diffusing glassware; diffusing, transmitting and reflecting properties of glass; reflecting and absorbing characteristics of paper and coated surfaces and the investigation of lighting units installed under service conditions.

Photographic Laboratory

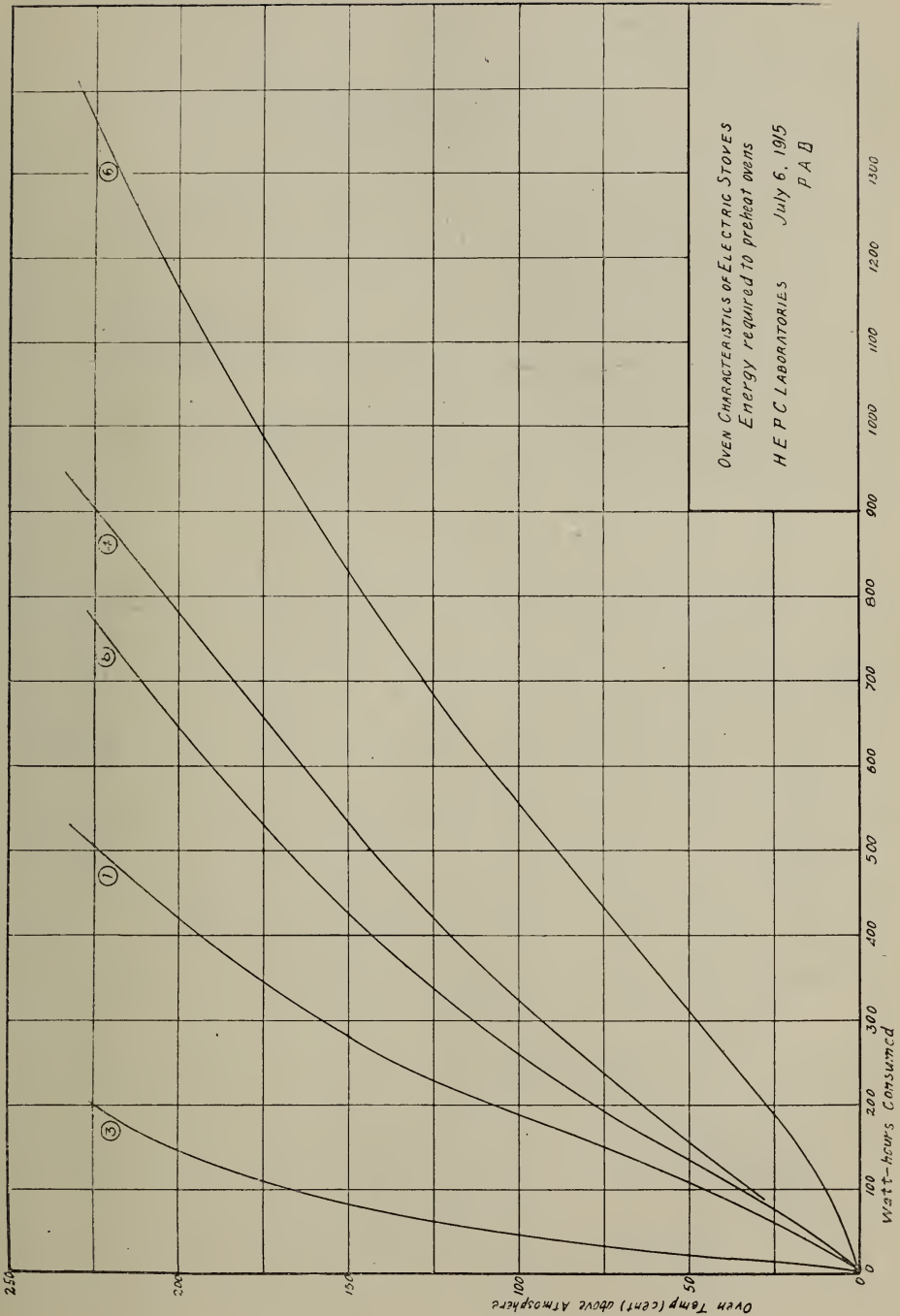
During the year the photographic work done by the laboratories increased considerably, and early in 1915 it was decided to equip a laboratory to handle any photographic work which might be necessary.

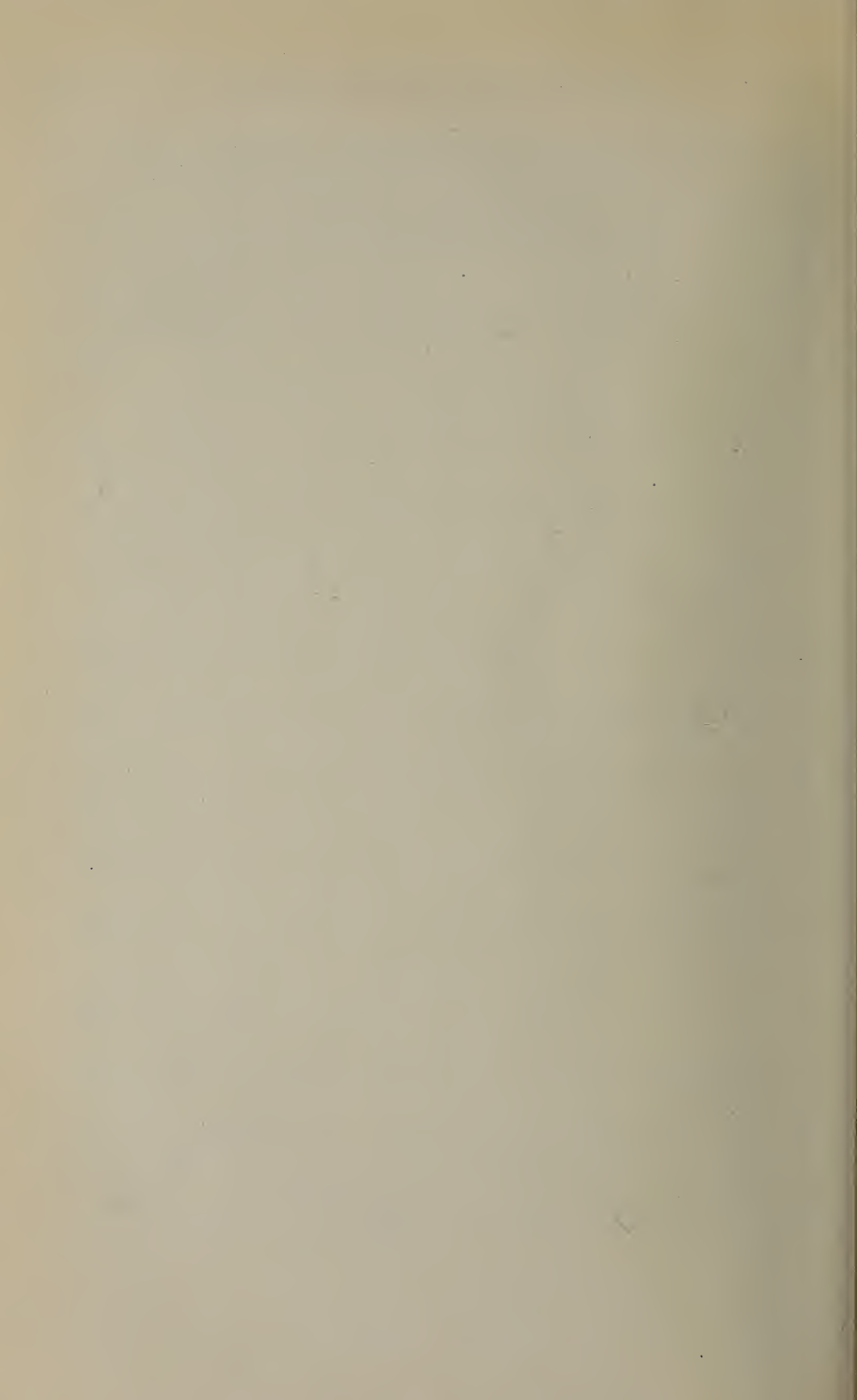
With this end in view an official photographer was appointed and a department organized. Additional space was provided in the laboratory building sufficient to include two dark rooms and a workroom. The equipment includes a studio camera for making copies, lantern slides and enlargements up to 8 x 10 inches, two view cameras 8 x 10 inches and 5 x 7 inches with suitable lenses covering a considerable range and capable of handling every kind of work.

Many photographs are taken by the engineers in the field for purposes of record and of illustrating reports. The exposed films are sent in to the laboratory, where they are developed, numbered, titled and filed. Prints are made from them

and mounted in albums suitably classified and kept in the office files. In cases where special photographic records are required, the official photographer proceeds to the desired locality and obtains a complete set of photographs, which are also placed on file as described above. The negatives thus obtained are then available for reproduction by contact enlargement, reduction, or on lantern slides. In this way a progressive record is kept of the construction work proceeding on the system.

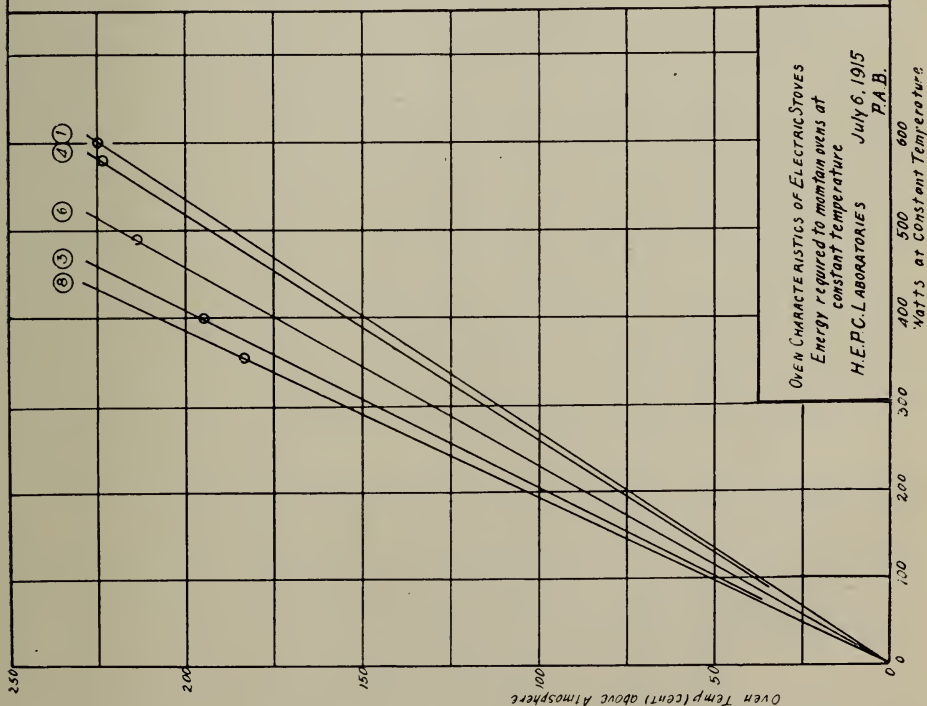
During the year over 500 orders have been handled, adding over 2,000 new negatives to the files, and about 10,000 prints made for reports, files, etc.

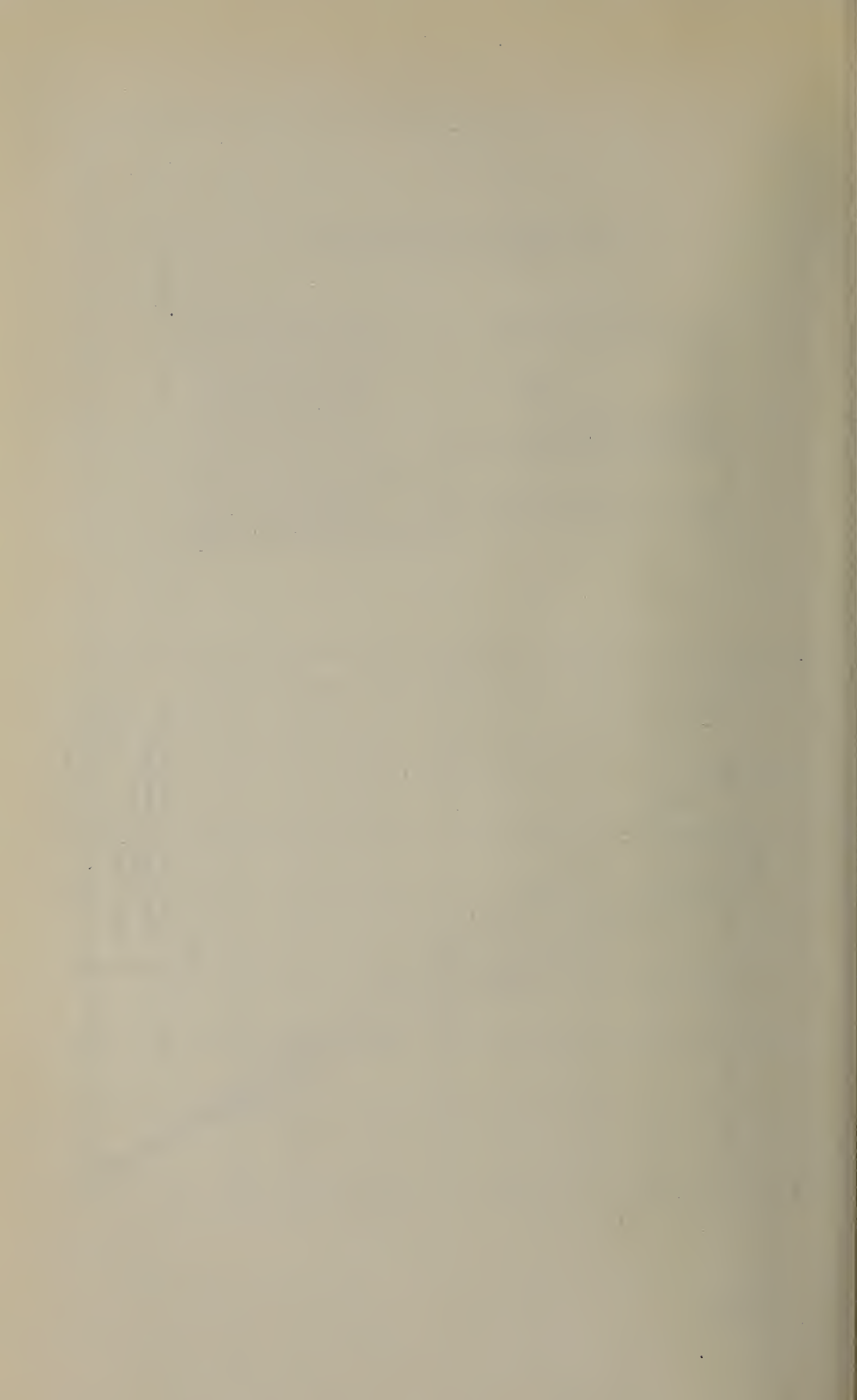




OVEN CHARACTERISTICS OF ELECTRIC STOVES
Comparative summary of tests

Test No	1	3	4	6	8	
Depth of Oven, inside — inches	18.5	12	17.5	17.5	16	
Height " " "	14.25	12.5	12	13	13.5	
Width " " "	18	17	17.75	18	19	
Area " " " sq in	1606	1134	1468	1554	1552	
Volume cu in	4745	2550	3725	4100	4110	
Maximum Watts in Oven	2475	1500	2225	1910	1375	
Time required to attain 250°C — min.	12	8	24.4	43	33	
Watt-hours required to attain 250°C Total	505	200	900	1375	760	
" " " " " " Per sq in area	.314	.176	.614	.885	.489	
" " " " " " Per cu in vol.	.106	.078	.241	.344	.185	
Watts required to maintain at 250°C Total	600	455	580	517	440	
" " " " " " Per sq in area	.374	.400	.395	.333	.283	
" " " " " " Per cu in vol	.126	.178	.156	.126	.107	





SECTION V

HYDRAULIC INVESTIGATIONS AND CONSTRUCTION

MEASUREMENT OF STREAM FLOW

The systematic measurement of stream flow was begun in 1912 and has been carried on continuously up to the present time. While this work has been under way for a comparatively short period, the results are extremely valuable in that they constitute the first attempt that has been made to ascertain with accuracy the flow characteristics of the important rivers of the Province. Records of this kind, extending over considerable periods of time, are absolutely indispensable in connection with working up schemes of hydraulic development, flood prevention and river improvement. These records are also exceedingly valuable in connection with the design and construction of bridges, and as a basis of study in connection with the classes of work above specified they should ultimately be the means of saving the Province from the recurrence of the immense losses which have hitherto been occasioned through flood damage and the improper design of dams and bridges. Work of this kind, being essentially of a preventative nature, must of necessity be carried out through a Governmental agency. Also, in the matter of hydraulic development, it is evident that no private enterprise can afford to spend four or five years collecting records of stream flow for the proper study of any specific scheme under consideration.

The scope of the stream measurement work has been gradually extended, until at the present time all the principal rivers in the south-western peninsula of the Province are under observation, as are also the rivers flowing into Georgian Bay and Lake Huron. Permanent metering stations have been established on the principal rivers in the Cobalt and Porcupine mining districts and are being extended westward along the line of the Transcontinental. The English and Winnipeg Rivers and their tributaries, and the rivers tributary to Rainy Lake, have been under observation for the past two years and a considerable amount of valuable data obtained, although the difficulty of obtaining gauge recorders in the unsettled districts, and the long distances to be covered by the field men, has made the collection of data a much slower process in this territory than is the case in other parts of the Province.

During the past summer metering stations were established on the principal streams tributary to Lake Ontario and the Ottawa River, and these rivers have been under continuous observation since that time. The stream flow investigations, therefore, cover all the important rivers of the Province, except the large boundary rivers and the rivers tributary to the north shore of Lake Superior. It is the intention, however, to bring the more important of the Lake Superior tributaries under observation as soon as possible.

Enamelled steel staff gauges have been set at all stations where good rating curves have been secured and where it was possible to obtain a gauge reader. Wherever possible, these gauges are read twice a day and the records sent to the district offices at the end of each week. At many of the stations it has been found impossible to eliminate the effects of back water, and wherever possible these stations have been abandoned and more favorable ones chosen. While this source

of error has thus been largely eliminated in the case of the stations on the northern rivers, it has been found impossible to altogether eliminate it in the case of several rivers in the south-western peninsula, principally on account of the large number of mill dams located upon the same. Furthermore, in the case of the Grand River, the operation of mill dams has made it impossible, during extreme low water periods, to obtain a true value of mean monthly discharge with two gauge readings per day. To eliminate this source of error, it would be necessary to install automatic recording gauges. It has not, however, been considered necessary to go to the expense of installing these gauges, because the investigations on the Grand River have primarily to do with flood prevention, and not power development, and it has so far been found possible to obtain reasonably accurate results by present methods for all but the extreme low stages of flow.

Details and tabulations covering all stream flow work up to December 31st, 1914, were published in the 1914 report of the Commission. Similar material appended hereto covers only the work of one year, from November 1st, 1914, to October 31st, 1915, and on account of the constantly increasing amount of data being obtained it is proposed in the future to include in the annual report the results of each succeeding twelve month period as above specified. This arbitrary adjustment of the annual period has been found necessary because the November and December data cannot be tabulated and properly adjusted for the effects of temperature and ice-cover before the report goes to press.

All discharge measurements were made with standard meters, and except where otherwise noted are accurate within a limit of five per cent. The rating curves from which the discharge tables were compiled are, in most cases, well defined, but in the case of certain streams, as noted in the tables, some revision of the tabled discharges may be necessary when further data on flood and winter discharge has been obtained and extra points fixed in the middle range of some of the rating curves.

There are now established a total of 74 metering stations and a total of 65 gauges, of which 50 are read twice daily, 14 read once a day, and 1 read intermittently. An effort is made to obtain at least one metering per month at all stations where the rating curve is not definitely established, and more frequent measurements are made when possible at all stations where rating data is lacking and where gauge recorders are not available.

POWER AND STORAGE SURVEYS

Niagara Power Development

During the summer of 1914 preliminary surveys were carried out in connection with a possible scheme of power development in the vicinity of Niagara Falls involving the use of the unallotted surplus of water available under the terms of the Boundary Waters Treaty and an effective head of not less than 300 feet. A preliminary cost estimate, based on these surveys, gave evidence of such good economic results that further surveys were begun in the spring of 1915 and are now practically completed. These surveys were carried out in great detail, and will furnish all the data necessary in connection with the preparation of detailed plans and the carrying on of construction.

The scheme of development involves the drawing of water from the Niagara River up the channel of Chippewa Creek to Montrose. From this point water will

be carried in an excavated canal to the crest of the escarpment a short distance above Queenston, from which point it will be carried into the gorge and used under an effective head of about 305 feet.

In the actual work of this survey is included:—

- (a) A contour survey of the bed of the Niagara River off the mouth of Chipewewa Creek, the establishment of directions of flow in the main stream by triangulation, and the measurement of discharge in the main stream for various distances from the shore up to 650 feet.
- (b) The cross-sectioning and close contouring of the bed and shores of Chipewewa Creek from the Niagara River to Montrose.
- (c) The establishment of a chained base line and precise levelled bench marks between Montrose and Queenston.
- (d) The close contouring by stadia of all the lands likely to be involved in the final location of the canal between Montrose and Queenston.
- (e) Close interval cross-sections along the canal location as finally established.
- (f) Core drill explorations along and in the vicinity of the proposed route of the canal. This exploration work involved about 1,786 lineal feet of drilling, some of the individual holes reaching depths of 112 to 330 feet. All cores obtained have been stored in boxes and carefully labelled for identification, so that the character of the sub-strata at any point along the canal route can be ascertained, with reasonable accuracy, by an inspection of these cores.

Various subsidiary surveys were also made to aid in studying the problem of spoil disposal and construction railways.

Saugeen River

This survey, begun in 1914, is now practically complete as regards field work. The work done on this scheme during 1914 gave evidence of much greater possibilities than had been anticipated, and the additional work done during the past summer will furnish all the information necessary for the future development of power on the Saugeen River in such a way as to vastly increase the economical value and importance of the recently completed development at Eugenia Falls.

Sand Island Falls

In response to a formal Resolution from the Town of Fort Frances, asking for the same, a detailed survey of the Sand Island Falls was made during the past summer, the object being to obtain the data necessary for investigating the economical possibility of developing this site for the use of the Municipality of Fort Frances and the surrounding district.

South Falls

As a result of an exhaustive preliminary investigation, the South Falls site on the south branch of the Muskoka River was decided upon as being the best source of power for the Municipality of Huntsville, which the Commission is under contract to supply with 800 h.p. This site had already been partially developed by the Town of Gravenhurst, and the problem consisted in re-modelling and increasing the capacity of this plant to meet the present demand for power in the district and to carry out the development in such a way as to provide for a future maximum installation of about 6,000 h.p. The necessary surveys were made and construction plans prepared in time to start construction work in September, 1915.

Cobden

In accordance with a Resolution forwarded by the Council of the Village of Cobden, a survey was made during December, 1914, of a power site in the vicinity of the village, with a view to ascertaining whether or not it could be utilized as a source of power for municipal and industrial requirements. A report based on the results of this survey, and appended hereto, was forwarded to the municipal authorities.

COBDEN

DEVELOPMENT OF POWER

Authority

In accordance with a request contained in a Resolution of the Council of the Municipality of Cobden, a preliminary investigation was made of a small power site adjacent to the village and the report forwarded to the Clerk of the Municipality in June, 1914. While it was pointed out that the figures contained in this preliminary report were only approximate, the municipal authorities considered them sufficiently favorable to warrant further detailed investigation, and a second Resolution, dated July 7th, 1914, was forwarded to the Commission asking that detailed surveys be made for the purpose of ascertaining more definitely the merits of the development scheme and the costs involved in connection therewith. In compliance with this second Resolution, surveys were made in December, 1914, and on the basis of these surveys were compiled the estimates which will be found hereunder.

Market Conditions

The Village of Cobden is located on the main line of the C.P.R., and is an important shipping point for grain and live stock. A general survey of market conditions indicates that if the price of power is reasonable, a load of 100 to 150 h.p. is obtainable, of which a large proportion would be ten-hour industrial power.

Revision of Preliminary Report

The figures given in the estimates hereunder confirm all those of the preliminary report with the exception of one item, namely, the cost of storage. In the preliminary report the available area of lake storage was based on figures locally obtained, but the surveys show that the area of lake storage was greatly over-estimated. In order to provide the required storage capacity, it was necessary

to provide more money for land damages and for the cost of storage dam construction. This has resulted in a 10% increase in the total capital cost as estimated in the preliminary report. The annual costs contained in the preliminary report have also been increased by about \$900 per annum, this increase being necessary partly on account of the increase in the interest, sinking fund and depreciation charges, but mainly because it was considered advisable to increase the operating costs to provide for the closer regulation of storage which will be necessary on account of the largely reduced volume which was found actually available as a result of the surveys.

Another reason for this increase in the annual costs is that the revised scheme of development involves the installation of one electrical unit only for full capacity of 150 h.p., instead of two separate units of 75 h.p. capacity each. Although the cost of power for loads under 100 h.p. will be greater, this change was considered advisable in view of the possibility of obtaining a 100 h.p. load immediately, and of the ultimate economy which will obtain when the total market is developed.

Location and Nature of Power Site

The proposed site of development is about three-quarters of a mile from the village on a small stream tributary to Muskrat Lake. The drainage area above the power site is contained principally in the Townships of Ross, Admaston, Bromley and Horton, having an area of about 28 square miles according to the best existing maps.

Facilities for artificial storage exist in Olmstead Lake and Edmonds Lake, which have a combined low water area of about 313 acres according to the township surveys. To provide the necessary volume of storage, a draft of six feet off these two lakes will be required, and it is proposed to obtain this draft by raising the water four feet above and drawing it down two feet below the level which existed during December, 1914. The depth of draft thus obtained, together with the local pondage available at the head works, will give a total volume of 96,400,000 cubic feet of storage. This volume of storage will deliver 11 second feet for 100 days, and should be sufficient to protect the plant during ordinary dry years. Assuming that the minimum flow of the stream during the three low summer months does not fall below 8 second feet, a total discharge of 19 second feet should be continuously available during any but abnormally dry years.

The power site itself has been previously developed, and is owned by Alex. McLaren, Esq., of Cobden. The plant has not been used for the last three years, but previous to that time was used to operate a flour mill using about 50 h.p.

Under the proposed scheme of development there will be about 48.5 feet of head available, and with the above estimated flow about 155 h.p. can be developed at 50% load factor.

In view of the nature of the load to be carried, it seems reasonably certain that the plant could carry a commercial load of 135 h.p. under all conditions, and that the installation of 150 h.p. capacity is justifiable.

Scheme of Development

The scheme of development involves, first, the purchase of approximately 64 acres of land about the margin of Olmstead Lake and Edmonds Lake. A timber crib storage dam designed to control six feet of draft is located at the outlet of Olmstead Lake. A certain amount of excavation will be necessary in the channel

of the stream below the storage dam to provide for the passage of water into the forebay pond under minimum draft conditions. The present dam will be utilized and a canal about 250 feet long excavated to the top of the hill above the power-house, where a head block is to be placed. To this head block will be connected a wood stave pipe 160 feet long which will be connected direct to the wheels in the power-house. The power-house will be located as at present, but instead of remodelling the present building it has been considered better economy to tear down the old structure and replace it by a new and properly designed building. In this building will be installed a 95 K.V.A., 2,200 volt, 3 phase, 60 cycle generator and exciter, with the necessary switching equipment. This generator will be direct connected to a horizontal double-runner turbine, hand controlled, and so designed that each runner can be operated separately in order that good hydraulic efficiencies may be obtained under low load conditions.

Estimate

The estimated cost of the plant above described is as follows:—

	Capital Cost.	Annual Cost.
Storage, including land damages, raising road, excavating channel and building dam	\$1,997 00	\$117 00
Canal and head block	1,172 00	50 00
Wood stave pipe	417 00	30 00
Power-house	1,610 00	30 00
Hydraulic machinery	2,100 00	105 00
Electrical equipment	2,204 00	108 00
	<hr/>	<hr/>
	\$9,500 00	\$440 00
Engineering and contingencies 10%	950 00	.....
McLaren option	3,000 00	.....
Interest during construction	150 00	.....
Operation .....	.....	1,350 00
Sundries .....	.....	75 00
Insurance, 5% .....	.....	68 00
Sinking Fund, 1.8%—30 years .....	.....	244 80
Annual interest, 5% .....	.....	816 00
	<hr/>	<hr/>
Grand Total	\$13,600 00	\$2,933 80
	<hr/>	<hr/>
	Capital Cost.	Annual Cost.
Cost of 150 h.p. delivered to the switchboard	\$ 91 00	\$20 00
“ “ 135 h.p. “ “ “	100 00	22 20
“ “ 100 h.p. “ “ “	136 00	29 94

Distribution

It is important to note that the above prices are for power delivered at the switchboard of the plant, and do not cover the cost of distribution throughout the village. The cost of distribution will require to be added to the figures given above, but if 100 h.p. can be sold the ultimate price of power to the consumer should be sufficiently attractive to enable the municipality to connect up the bulk of the village load.

TORONTO, February 18th, 1915.

POWER CONSTRUCTION

Waddell's Falls

The Waddell's Falls plant, located on the Severn River, has now been operating about fifteen months. This installation has been quite satisfactory under conditions of service.

Certain additions have been made to the equipment of the station during the past year. The winch on the main dam has been equipped with a motor to facilitate the handling of the stop logs. Also a motor-operated centrifugal pump has been installed in the pump chamber provided in the original layout to allow of unwatering the draft-tubes for inspection and repairs on turbines, runners and gates.

Eugenia Falls

This plant was completed in the fall of 1915, and was formally opened and placed in service on November 18th. A description of the development and the progress of construction was given in the report of the Commission for 1914. The work has since proceeded steadily, with no interruption or delay.

The station, when completely equipped, will have an installation of four units with an aggregate capacity of 8,000 electrical horsepower. Two units are installed at present. Foundations and superstructure are constructed only for the first two units, but the gate-house, tail-race and dams are completed for the full capacity.

The Ambursen Hydraulic Construction Company of Montreal, contractors for No. 1 dam, completed the work on December 22nd, 1914, and dismantled and removed their plant early in January, 1915.

The contract for No. 2 dam, the canal, flume line, excavation and headworks, which was handled by the Hyland Construction Company of Toronto, was completed on schedule time. The dressing and seeding of the earth slopes of the fills was done by the Commission in the spring. A good protective covering of alfalfa now protects the new fills, and as a result very little sliding, and practically no erosion, has occurred on the fills thus treated.

The wood stave pipe, which was furnished and erected by the Pacific Coast Pipe Company of Vancouver, B.C., was finished early in February. Under test this pipe has proven very satisfactory, and is practically watertight.

Some trouble was experienced by the contractors for the steel penstock, the Thor Iron Works of Toronto, in driving the $1\frac{1}{4}$ inch rivets in the heavier sections at the lower end. These difficulties were overcome, however, and the pipe was practically watertight under test, leakage being now entirely eliminated, with the exception of a small drip at the expansion joints.

The surge tank, fabricated and erected by the Canadian Allis-Chalmers Company of Toronto, was finished without undue trouble, and has given satisfactory results in test and operation. The wooden housing of the tank, placed for frost protection, also the housing on the steel penstock, were constructed by the Commission's own working staff.

Work on the power-house was completed early in the summer, and the installation of the electrical and hydraulic equipment was completed in October. A series of tests was then run on the various elements of the development to obtain the hydraulic and operating characteristics of the wood stave pipe, surge tank, penstock, turbines and auxiliary machinery.

By installing mercury manometers on the gallery of the surge tank, and a measuring weir in the tail-race, all the hydraulic data necessary in the above tests were obtained. It is gratifying to note that the results of the tests corroborated in every respect the assumptions and calculations made in connection with the design.

Since November 18th the plant has been in continuous commercial operation, and the results so far are such as to give every assurance of uninterrupted and efficient service.

South Falls

South Falls, on the south branch of the Muskoka River, was settled upon as being the best source of power for the Gravenhurst-Huntsville district. This site had been partially developed by the Town of Gravenhurst under a Provincial lease, and during the summer of 1915 the Commission carried on negotiations with the town, having in view the acquisition of full control of the water power in question. An agreement was finally arrived at whereby the Commission took over the power site, lands, leaseholds and all existing works on condition of assuming the outstanding balance of debenture charges against the property. This agreement was confirmed by by-law and actual construction work was started by the Commission early in September, 1915, and has since progressed continuously without interfering with the operation of the existing plant.

The work to be done at the plant consists in the remodelling of the forebay of the existing development, the installation of a wood stave pipe, a steel penstock and an additional hydraulic unit in the power-house. The present power-house building will also require to be extended to make room for the high-tension equipment and transformers.

Tenders were called in August, 1915, for the furnishing of material for the construction of a wood stave pipe 60 inches in diameter and 970 feet long, and for the fabrication and erection of a steel penstock, head-gate mechanism and turbine complete. The Pacific Coast Pipe Company of Vancouver, B.C., received the contract for the wood stave pipe. This material has all been delivered on the ground, and the Commission's engineering staff will shortly proceed with the erection of the same.

The William Hamilton Company of Peterborough, received the contract for the head-gate mechanism, steel penstock and turbine. Delivery has already been made on the penstock, and erection will be proceeded with immediately. Delivery on the turbine equipment will be made early in January.

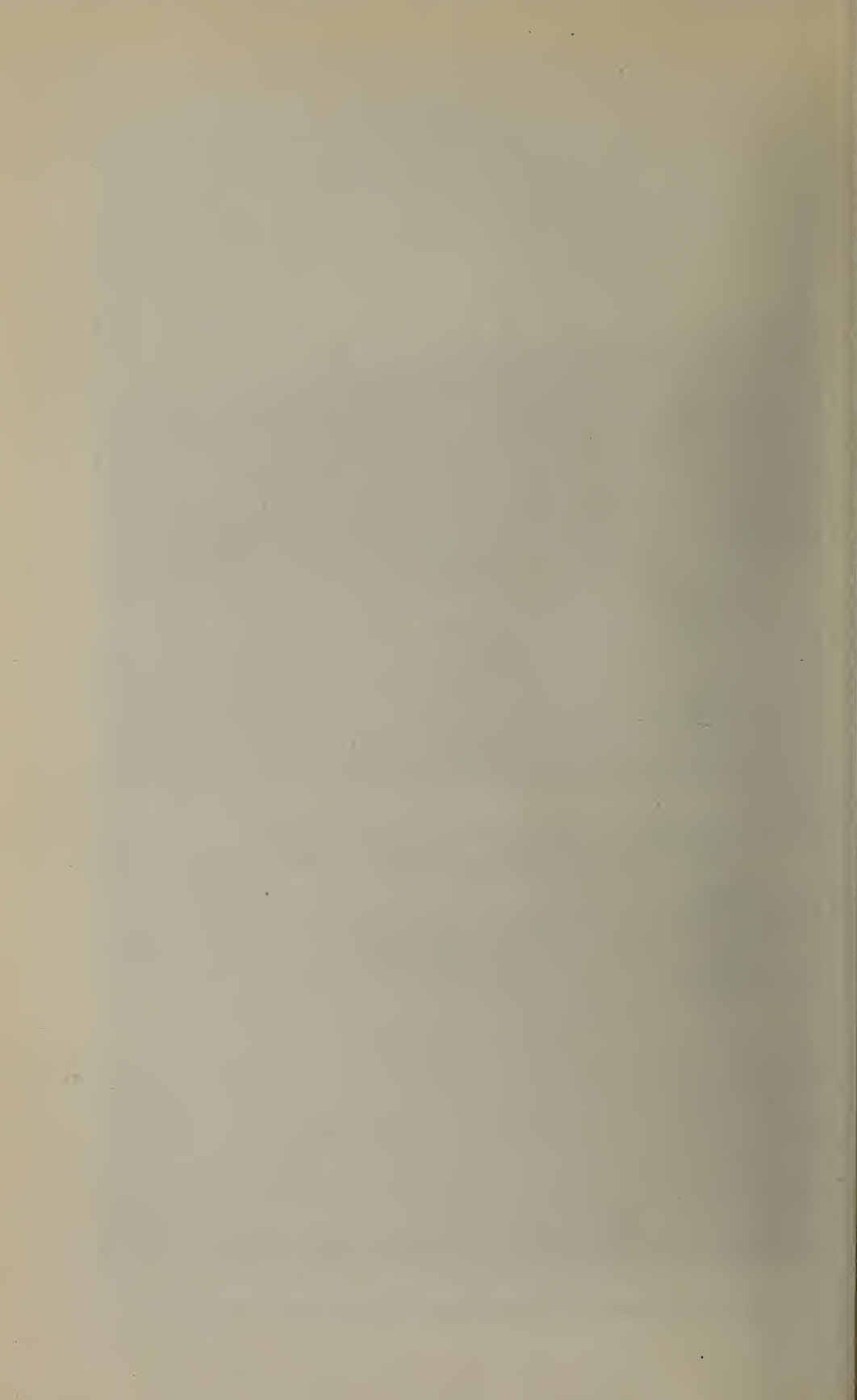
A permanent road has been built from the main highway to the power-house, and the grading for the wood stave pipe and steel penstock has been completed. The concrete anchors for the steel penstock have been poured. The excavation for the extension to the power-house and tail-race has been practically finished, and a start has been made on pouring the concrete in the sub-structure.

The new hydraulic unit consists of a butterfly entry valve, a single-runner Francis type turbine with globe casing and flywheel, and a pressure regulator. The capacity of the unit is 1,000 horsepower at 102 feet head, and 720 revolutions per minute.

This will give a total capacity at the plant, including the present installed unit, of about 1,500 electrical horsepower. The development has been laid out in such a manner that a total capacity of 6,000 electrical horsepower, in three units, may be ultimately installed should the future market conditions make such action necessary.



Surge Tank, Penstock and Power House—Eugenia Falls Development

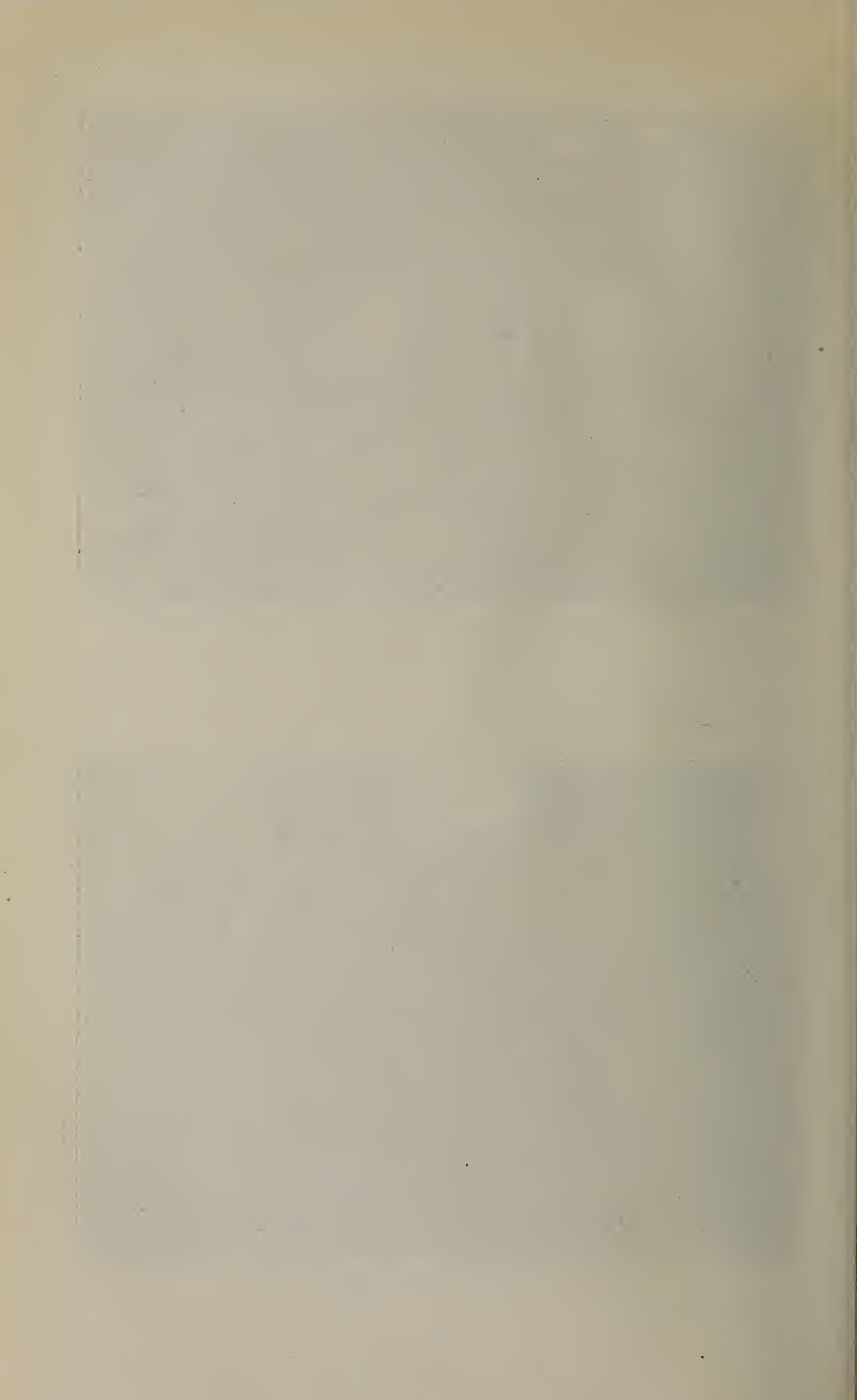




Eugenia Falls—Power House Interior During Erection of Hydraulic and Electrical Equipment



Eugenia Falls—Complete Main Unit and Exciter

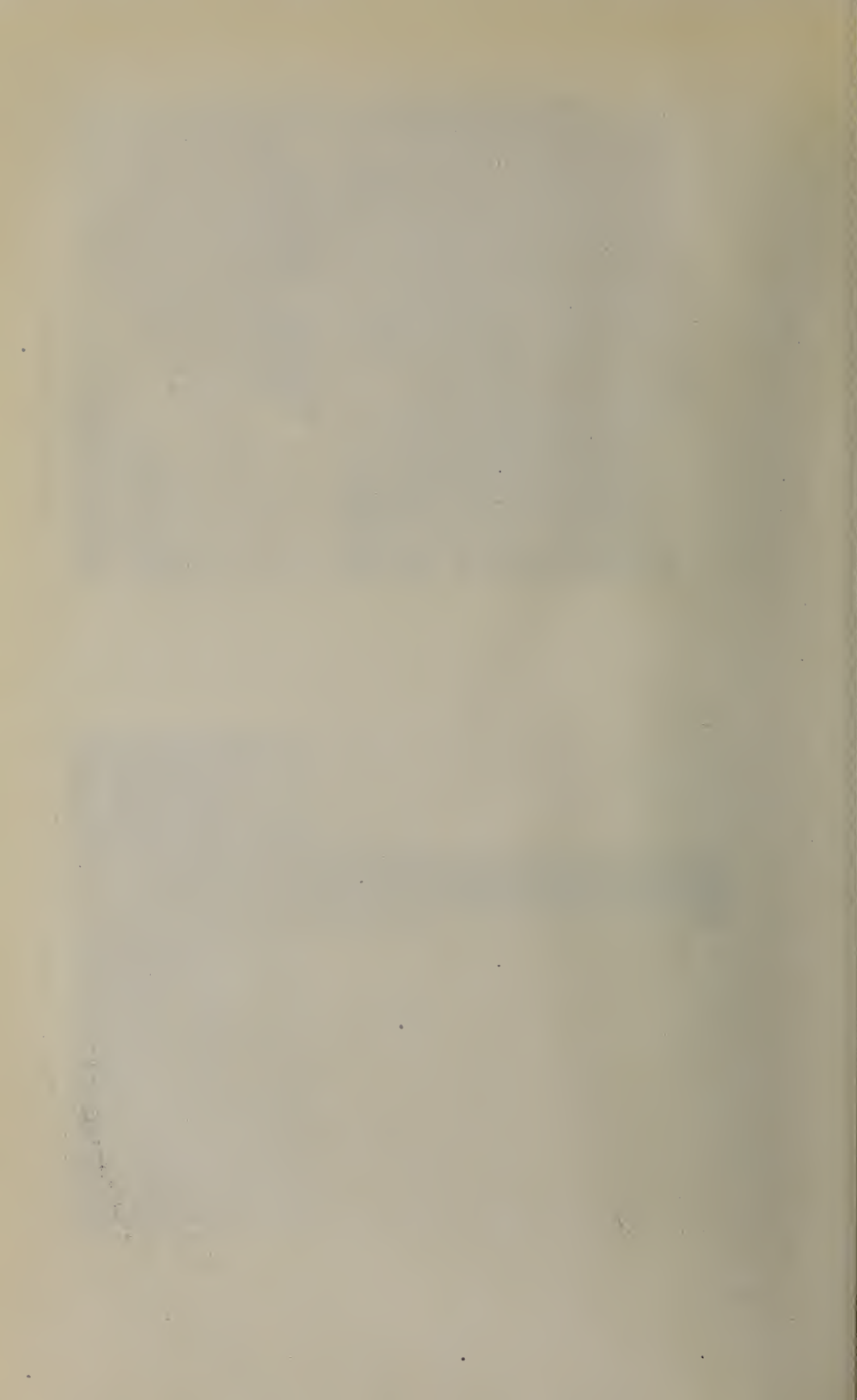




Eugenia Falls—Surge Tank



Eugenia Falls—Power House From Tail-Race

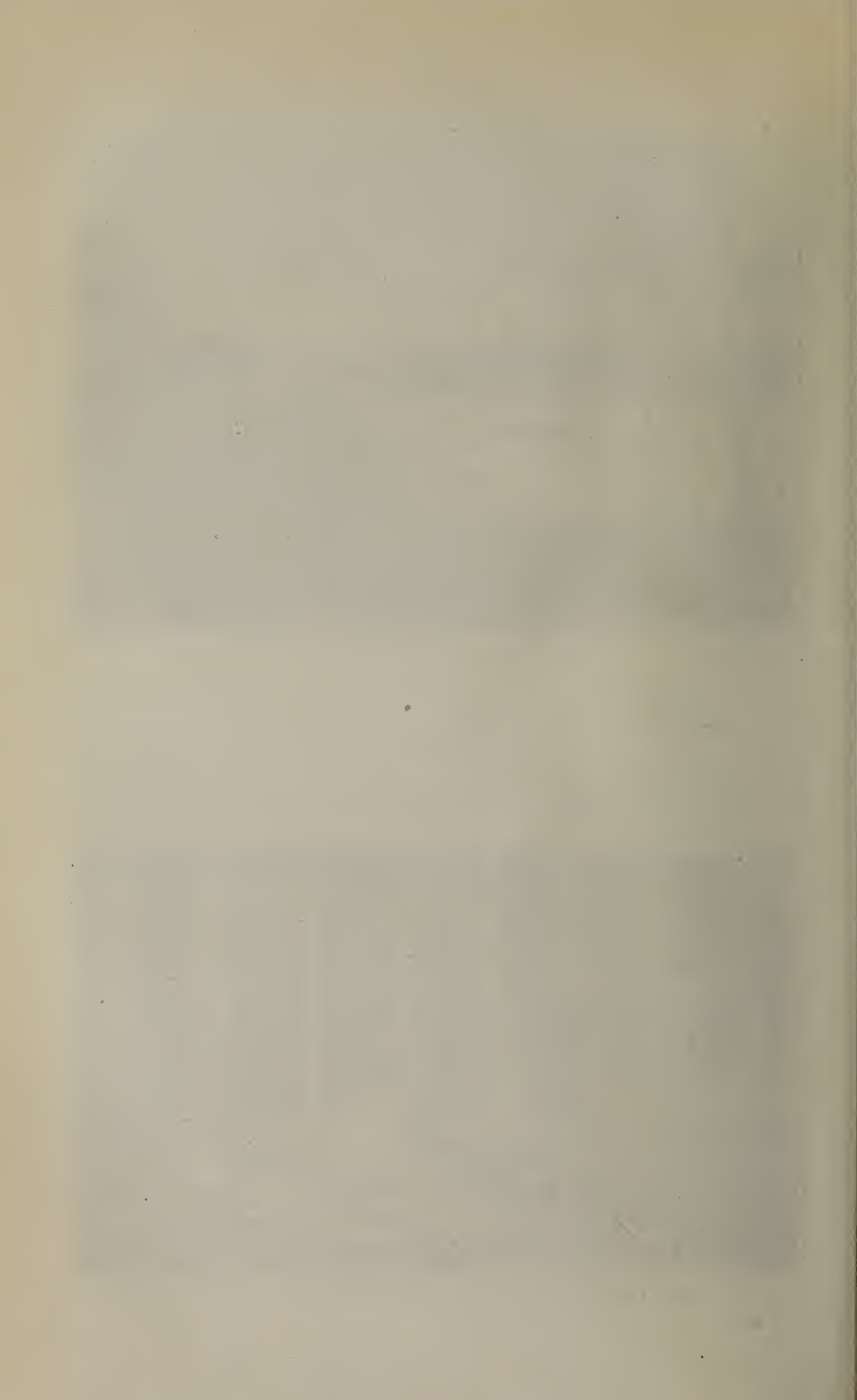




Eugenia Falls—No. 2 Earth-Fill Dam



Eugenia Falls—High Section (50 ft.) of No. 1 Dam, From the Down Stream Side

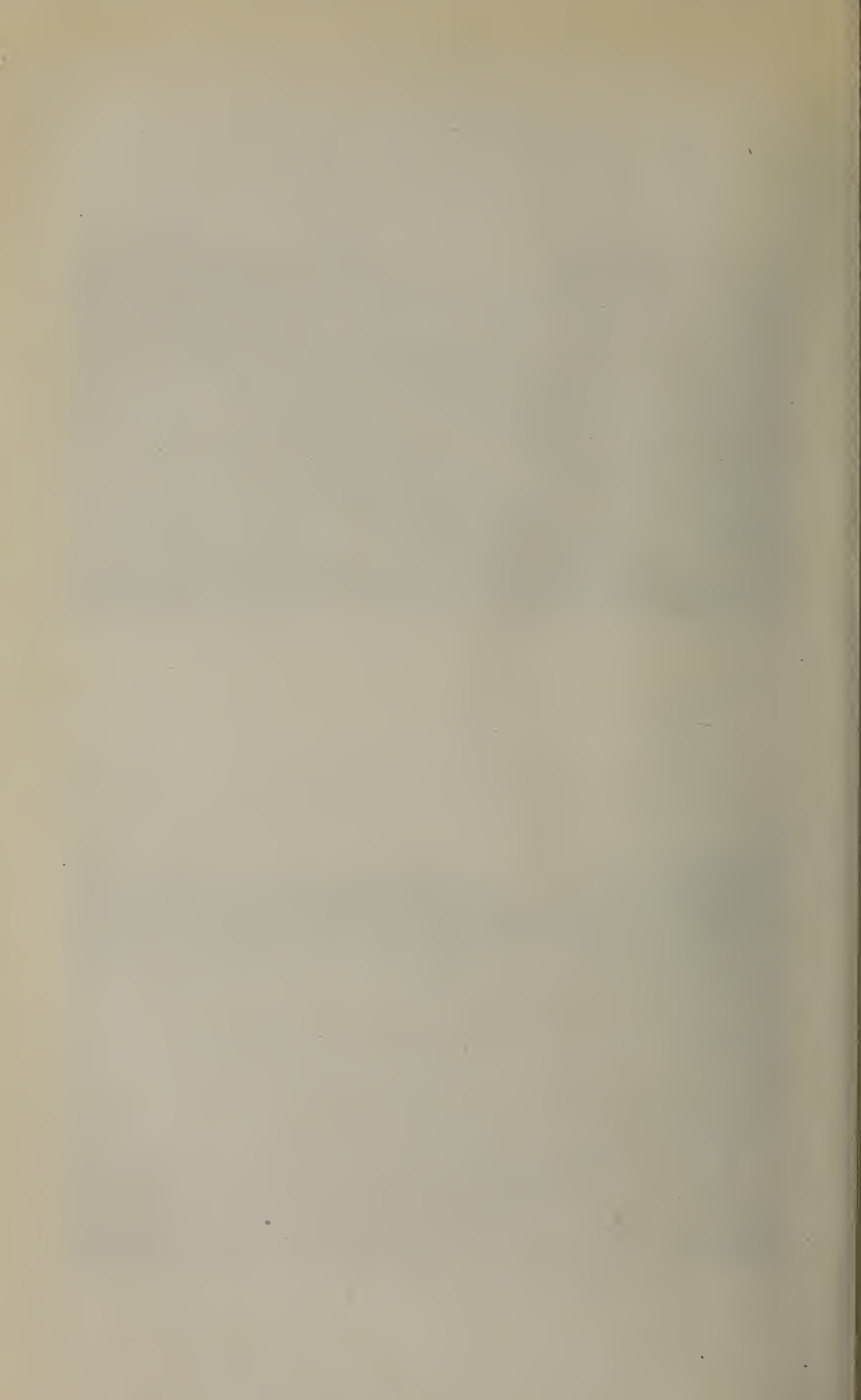




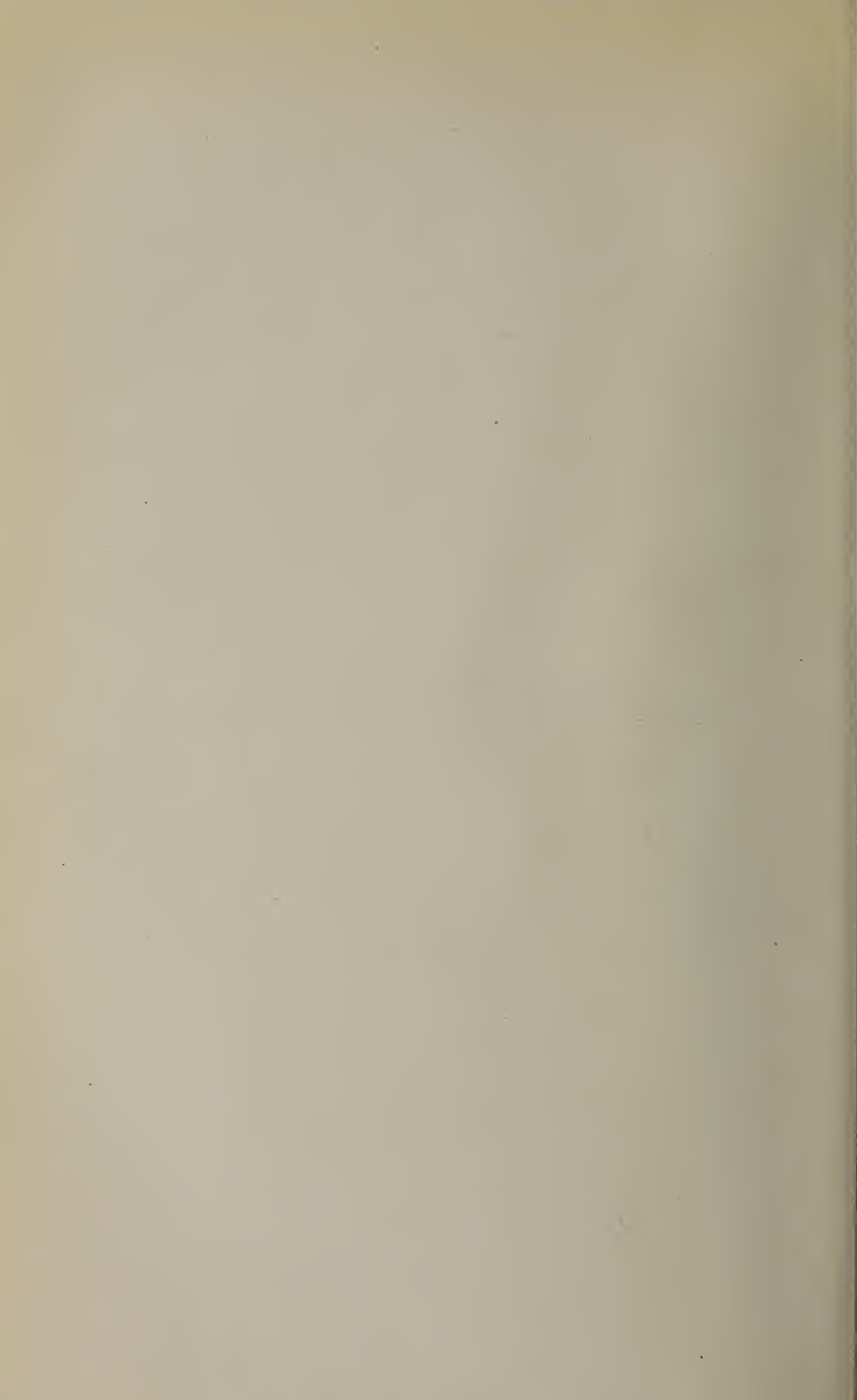
Eugenia Falls—Wood-Stave, Pipe-Line and Surge-Tank



Eugenia Falls—Main Forebay and Gate-House



STREAM FLOW DATA



Regular Stations

EASTERN ONTARIO DISTRICT

River	Location	Drain- age Area Sq. Miles	Township	County or District
Bonnechere	near Eganville	670	Wilberforce	Renfrew Co
“	near Golden Lake	575	South Algona	“
Madawaska	at Madawaska .....	.....	Murchison	“
Mississippi	at Ferguson's Falls	1,042	Drummond	“
“	at Galetta	1,456	Fitzroy	Carleton Co
“	near Snow Road	446	Sherbrooke	Lanark Co
Moirs	near Foxboro	1,038	Thurlow	Hastings Co
Napanee	near Napanee	300	Camden	Addington Co
Tay	near Glen Tay	204	Bathurst	Lanark Co
York	near Bancroft	374	Faraday	Hastings Co

Bonnechere River near Eganville

Location—400 feet downstream from McCrae's Power Plant, and one mile from the Village of Eganville, near lot 16, concession 6, Township of Wilberforce, County of Renfrew.

Records Available—Discharge measurements in September, 1916, and monthly thereafter. Gauge readings from September 24, 1915.

Drainage Area—670 square miles.

Gauge—A point on the rock bottom of the river from which direct readings are made to the water surface.

Channel and Control—The channel is slightly curved from the power house above and straight for $\frac{1}{2}$ mile below the section. The bed of the river is shale, solid rock, and stones in some places. The banks are high, rocky and wooded, and not liable to overflow.

Discharge Measurements—Made by wading in section with the gauge at most stages, but frequently a few hundred yards further upstream at suitable low stages for better results.

Winter Flow—Likely the relation between gauge heights and discharge will be seriously disturbed during winter months.

Regulation—McCrae's plant and dam is a short distance above the section, and there is another dam at Eganville, and one between. The flow is further regulated by the operation of the Round Lake Dam and the lumber dams on tributary streams.

Accuracy—Good for open channel measurements.

Observer—H. Welk, Eganville.

Discharge Measurements of Bonnechere River near Eganville in 1915

Date	Hydrographer	Width in Feet	Area of Section in Sq. Feet	Mean Velocity in Feet per Sec.	Gauge Height in Feet	Discharge in Sec-Feet	Discharge in Second-feet per Square Mile
Sept. 23....	McLennan, C.C.	127	184	1.74	100.83	320	.....
Oct. 26....	" ..	122	110	1.12	100.27	123	.....
" 26....	" ..	55	60	2.49	100.40	151	.....

Monthly Discharge of Bonnechere River near Eganville for 1914-5

Drainage Area, 670 Square Miles

Month	Discharge in Second-feet			Discharge in Second-feet per Square Mile			Run-off
	Maximum	Minimum	Mean	Maximum	Minimum	Mean	Depth in Inches on Drainage Area
November (1914)							
December							
January .. (1915)							
February							
March							
April							
May							
June							
July							
August							
September 24-30.	325	278	308	.48	.41	.46	.12
October	309	120	239	.46	.18	.36	.42
The period	325	120	252	.48	.18	.38	.54

Bonnechere River near Golden Lake

Location—At the highway bridge between Golden Lake Station and Village, in the Township of South Algona, County of Renfrew.

Records Available—Discharge measurements made monthly from June, 1915. Daily gauge heights from June 26, 1915.

Drainage Area—575 square miles.

Gauge—Elevations of water surface made by indirect readings from a point on the bridge, whose elevation is checked monthly.

Channel and Control—Bays exist above and below the section, the current being very slow up to the bridge. The flow is confined between the abutments of the bridge at all stages. The bed of the river is well protected by large boulders, and is not subject to change.

Winter Flow—Seriously affected by ice.

Regulation—The flow is regulated to the capacity of the Round Lake Dam for storage purposes, and the lumber industry has flood dams on some of the tributary waters.

Accuracy—Mean of daily readings give good results for stage readings.

Observer—J. L. Foster, Golden Lake.

Discharge Measurements of Bonnechere River near Golden Lake in 1915

Date	Hydrographer	Width in Feet	Area of Section in Sq. Feet	Mean Velocity in Feet per Sec.	Gauge Height in Feet	Discharge in Sec-Feet	Discharge in Second-feet per Square Mile
June 25....	McLennan, C. C.	112	325	1.26	555.94	411	.....
July 28....	“ ..	107	239	0.67	555.26	161	.....
Aug. 25....	West, C. W	112	325	1.21	555.96	391	.....
Sept. 24....	McLennan, C. C.	109	293	1.14	555.76	331	.....
Oct. 26....	“ ..	107	237	0.64	555.24	152	.....

Monthly Discharge of Bonnechere River near Golden Lake for 1914-5

Drainage Area, 575 Square Miles

Month	Discharge in Second-feet			Discharge in Second-feet per Square Mile			Run-off
	Maximum	Minimum	Mean	Maximum	Minimum	Mean	Depth in Inches on Drainage Area
November (1914)							
December							
January .. (1915)							
February							
March							
April							
May							
June 26-30.....	406	378	396	.71	.66	.69	.13
July	364	122	248	.63	.21	.43	.50
August	427	105	253	.74	.18	.44	.51
September.....	427	245	367	.74	.43	.64	.71
October.....	252	98	188	.44	.17	.33	.38
The period.....	427	98	268	.74	.17	.47	2.23

Madawaska River at Madawaska

Location—50 feet above the G.T. Ry. bridge, Canada Atlantic branch, 500 yards east of the Madawaska Station.

Records Available—Discharge measurements made in September, 1915, and monthly thereafter, and gauge readings from September 27, 1915.

Drainage Area—Not measured.

Gauge—Three feet of standard gauge plates secured vertically to pile three feet west of face of east abutment.

Channel and Control—Channel is straight for about 400 feet above the section, curving slightly to the right under the bridge. The banks are sandy, and not liable to overflow. The bed of the river is soft, and there are some weeds above the section. The point of control is not clearly defined.

Discharge Measurements—Made about fifty feet above gauge from a boat.

Winter Flow—Seriously affected by ice conditions.

Regulation—Lumber interests on the river above the section operate dams for driving purposes.

Accuracy—Open water rating curve for ordinary stages likely to be very good.

Observer—G. Wormke, Madawaska.

Discharge Measurements of Madawaska River at Madawaska in 1915

Date	Hydrographer	Width in Feet	Area of Section in Sq. Feet	Mean Velocity in Feet per Sec.	Gauge Height in Feet	Discharge in Sec-Feet	Discharge in Second-feet per Square Mile
Sept. 28....	McLennan, C. C.	78	480	0.62	102.00	296	.....
Oct. 28....	"	78	473	0.56	101.88	263	.....

Mississippi River at Ferguson's Falls

Location—At the highway bridge on the road through the Village of Ferguson's Falls, near lots 16 and 17, concession 12, Township of Drummond, County of Lanark.

Records Available—Discharge measurements from July, 1915, and gauge readings from July 13, 1915.

Drainage Area—1,042 square miles.

Gauge—0 to 6 feet of standard gauge plates secured to the inner face of the first pier from the south end of the bridge, and near the downstream corner of the pier.

Channel and Control—Channel is straight for 300 feet above and $\frac{1}{2}$ mile below the gauging section. The banks are not liable to overflow. There are 7 channels, formed by the piers of the bridge. The present control is a short distance below the section, and ice action there will affect the discharge relation at low winter stages, but this will not be the point of control for high-water stages.

Winter Flow—Discharge relation will be affected by ice.

Regulation—The river is regulated throughout its length by power and storage dams, as well as dams in connection with the timber industry.

Accuracy—Open flow relation will be good.

Observer—A. M. Sheppard, Ferguson's Falls.

Discharge Measurements of Mississippi River at Ferguson's Falls in 1915

Date	Hydrographer	Width in Feet	Area of Section in Sq. Feet	Mean Velocity in Feet per Sec.	Gauge Height in Feet	Discharge in Sec-Feet	Discharge in Second-feet per Square Mile
July 13....	McLennan, C. C..	263	259	1.92	101.38	498	.....
Aug 10....	" ..	201	259	2.01	101.40	521	.....
Sept. 14....	West, C. W.	183	258	2.04	101.42	527	.....
Oct 15....	McLennan, C. C..	196	242	1.82	101.33	440	.....

Monthly Discharge of Mississippi River at Ferguson's Falls for 1914-5

Drainage Area 1,042 Square Miles

Month	Discharge in Second-feet			Discharge in Second-feet per Square Mile			Run-off
	Maximum	Minimum	Mean	Maximum	Minimum	Mean	Depth in Inches on Drainage Area
November (1914)							
December							
January ... (1915)							
February							
March							
April							
May							
June							
July 13-31	499	266	340	.48	.25	.33	.23
August	749	204	529	.72	.20	.51	.59
September	726	429	516	.70	.41	.50	.58
October	507	429	466	.49	.41	.45	.52
The period	749	204	480	.72	.20	.46	1.92

Mississippi River at Galetta

Location—In the Village of Galetta, Township of Fitzroy, County of Carleton, about one hundred feet above, and parallel to the highway bridge over the river. It is only a few hundred yards below the dam and power house of the Galetta Power & Milling Company.

Records Available—Discharge measurements made monthly from June, 1915, and gauge readings twice a day from June 24, 1915.

Drainage Area—1,456 square miles.

Gauge—0 to 6 feet of standard enamelled plates secured to the left abutment of the highway bridge.

Channel and Control—Channel is straight for 200 feet above and below the section to a little rapid. The river bed is composed of gravel and stones, with solid rock on the right bank and gravel on the left bank. The point of control is through a solid rock formation a hundred and fifty yards below the section.

Discharge Measurements—Made by wading and from a boat held up to tag line by cable. Extreme high-water measurements may have to be made from the highway bridge.

Winter Flow—The winter conditions here will not seriously affect the gauge height and discharge relations.

Regulation—The river is subject to regulation throughout its entire length. In the headwaters are storage dams for power purposes, as well as timber dams for driving purposes.

Accuracy—Owing to the wet season the wasted water has been considerably more than would usually be the case. This season's relations between gauge height and discharge are likely better than those of the ordinary year.

Co-operation—Discharge measurements made at the bridge by the Department of Public Works of Canada.

Observer—J. P. Coyne, Galetta P.O.

Discharge Measurements of Mississippi River at Galetta in 1915

Date	Hydrographer	Width in Feet	Area of Section in Sq. Feet	Mean Velocity in Feet per Sec.	Gauge Height in Feet	Discharge in Sec-Feet	Discharge in Second-feet per Square Mile
June 24....	McLennan, C. C..	90	148	3.71	244.54	551	.....
July 27....	" ..	61	103	3.07	243.86	317	.....
Aug. 24....	West, C. W.	107	279	3.78	245.90	1,054	.....
Sept. 21....	McLennan, C. C.	60	97	3.18	243.74	309	.....
Oct. 23....	" ..	67	122	3.05	244.20	373	.....

Monthly Discharge of Mississippi River at Galetta for 1914-5

Drainage Area. 1,456 Square Miles

Month	Discharge in Second-feet			Discharge in Second-feet per Square Mile			Run-off
	Maximum	Minimum	Mean	Maximum	Minimum	Mean	Depth in Inches on Drainage Area
November (1914)							
December							
January (1915)							
February							
March							
April							
May							
June 23-30	583	456	509	.40	.31	.35	.10
July	776	289	498	.53	.20	.34	.39
August	1,096	289	627	.75	.20	.43	.50
September	931	266	545	.64	.18	.38	.42
October	507	377	442	.35	.26	.30	.35
The period	1,096	266	527	.75	.18	.36	1.76

Mississippi River near Snow Road

Location—At the highway bridge about two miles below the Village of Snow Road, Township of Sherbrooke, County of Lanark.

Records Available—Discharge measurements made monthly from July, 1915, and gauge readings on week days since July 30, 1915.

Drainage Area—496 square miles.

Gauge—0 to 6 ft. of standard gauge plates secured vertically to the downstream side of the left abutment of the highway bridge. The elevation of the zero on gauge is assumed as 100.00.

Channel and Control—The channel approaches and leaves the section at a slight angle. The banks are high, and are not liable to overflow. The bridge pier forms two channels at the gauging section. Earth, rocks and gravel in the river bed, not shifting. Control for ordinary stages not well defined. At very high water stages the point of control is probably the head of the rapids just above High Falls.

Discharge Measurements—Measurements made from bridge at all stages.

Winter Flow—Discharge relation seriously affected by ice.

Regulation—The power and lumber companies operating on this river have storage dams above this point on the river.

Accuracy—No Sunday readings have been secured by gauge-readers, but the fluctuation in stage is slow, and the open-water relation should be good.

Observer—Fred. Jackson, Snow Road.

Discharge Measurements of Mississippi River near Snow Road in 1915

Date	Hydrographer	Width in Feet	Area of Section in Sq. Feet	Mean Velocity in Feet per Sec.	Gauge Height in Feet	Discharge in Sec-Feet	Discharge in Second-feet per Square Mile
July 30....	McLennan, C. C..	57	310	0.61	101.83	190	.....
Aug. 26....	West, C. W.	70	345	1.04	102.44	357	.....
Sept. 29....	McLennan, C. C..	57	353	0.93	102.25	309	.....
Oct. 25....	" ..	57	327	0.92	102.17	302	.....

Monthly Discharge of Mississippi River near Snow Road for 1914-5

Drainage Area, 446 Square Miles

Month	Discharge in Second-feet			Discharge in Second-feet per Square Mile			Run-off
	Maximum	Minimum	Mean	Maximum	Minimum	Mean	Depth in Inches on Drainage Area
November (1914)	.....	.....	.....	.....	.....	.....	.....
December "	.....	.....	.....	.....	.....	.....	.....
January ..(1915)	.....	.....	.....	.....	.....	.....	.....
February .....	.....	.....	.....	.....	.....	.....	.....
March .....	.....	.....	.....	.....	.....	.....	.....
April .....	.....	.....	.....	.....	.....	.....	.....
May .....	.....	.....	.....	.....	.....	.....	.....
June.....	.....	.....	.....	.....	.....	.....	.....
July .....	.....	.....	.....	.....	.....	.....	.....
August	397	190	311	.89	.43	.70	.81
September	397	302	329	.89	.68	.74	.83
October	326	270	299	.73	.61	.67	.77
The period	397	190	313	.89	.43	.70	2.41

Moira River near Foxboro

Location—Three hundred feet above G.T.R. Crossing, and six hundred feet east of Foxboro Station, on the G.T.R.-Belleville, Peterboro Branch. Near Lot 5, Concession VI, Township of Thurlow, County of Hastings.

Records Available—Monthly discharge measurements from September, 1915, and gauge readings from October 12, 1915.

Drainage Area—1,038 square miles.

Gauge—Three points on the bed of the river, about 50 feet above the section have been selected from which the elevation of the water surface is measured twice daily. One of these points is used at a time, according to the stage of the river.

Channel and Control—At one side of the river at the section are boulders and rocks, but the rest of the section is smooth, solid rock, liable to no movement at all. The control is only a few feet below the section and is not likely to freeze over in winter except for short periods of time.

Discharge Measurements—At ordinary stages the measurements are made by wading, at tag line.

Winter Flow—The relation of gauge height to discharge will be affected by ice, but likely in a fairly uniform manner throughout the winter.

Regulation—The river above the section has dams in many places besides the regulation for the lumber interest, on different tributary lakes and streams.

Accuracy—Open water relation will be good.

Observer—C. Stewart, Foxboro P.O.

Discharge Measurements of Moira River near Foxboro in 1915

Date	Hydrographer	Width in Feet	Area of Section in Sq. Feet	Mean Velocity in Feet per Sec.	Gauge Height in Feet	Discharge in Sec-Feet	Discharge in Second-feet per Square Mile
Sept 9.....	West, C. W.....	164	253	1.76	322.21	446	.45
Oct. 12	McLennan, C. C.	164	229	1.58	322.21	363	.35

Napanee River near Napanee

Location—At Mink's Bridge, three miles from Napanee, near lot 1, concession 1, Township of Camden, County of Addington.

Records Available—Discharge measurements made monthly from August, 1915, and gauge readings from September 8, 1915.

Drainage Area—300 square miles.

Gauge—Standard gauge plates 0 to 6 ft. firmly secured to a 4 x 4 in. pine driven in river bottom and spiked and wired to one of three elms in one cluster on the right bank 400 ft. above the bridge and section.

Channel and Control—The channel is curved above the section to within 20 feet of the bridge, and is straight for 300 feet below. The right bank is high, while the left is comparatively low and liable to overflow. The bed of the stream is composed of rocks and gravel, not likely to shift.

Discharge Measurements—Made by wading at low stages and from bridge at high stages.

Winter Flow—Relation of gauge height to discharge is affected by ice.

Regulation—There are several power developments on the upper part of the river, and also lumber dams on tributary waters.

Accuracy—Two daily readings give good mean daily gauge heights.

Observer—Mrs. Dan. O'Shaughnessy, Napanee.

Discharge Measurements of Napanee River near Napanee in 1915

Date	Hydrographer	Width in Feet	Area of Section in Sq. Feet	Mean Velocity in Feet per Sec.	Gauge Height in Feet	Discharge in Sec-Feet	Discharge in Second-feet per Square Mile
Aug. 16....	McLennan, C. C.	64	106	1.43	102.27	153	.51
Sept. 8....	West, C.W.	60	62	1.11	101.58	69	.23
Oct. 8....	McLennan, C. C.	64	87	1.42	101.98	124	.41

Tay River near Glen Tay

Location—Near lots 20 and 21, concession 11, Township of Bathurst, County of Lanark. At the highway bridge north of the Village of Glen Tay, and east of the auxiliary plant of the Canadian Electric & Water Company, Limited, of Perth and Ottawa.

Records Available—Discharge measurements made July, 1915, and monthly thereafter, and gauge readings from July 10, 1915.

Drainage Area—204 square miles.

Gauge—Vertical steel staff 0 to 3 feet fastened to the pier of bridge one foot above section.

Channel and Control—The channel is straight from the dam 150 feet above and straight for 250 feet below the section. The banks are high, and not liable to overflow. The bed of the river is composed of shale and stones, not shifting. The flow is confined between the bridge abutments at all stages. The control is a short distance below the section, and the flood flow is likely to disturb it to some extent.

Discharge Measurements—Made by wading at ordinary stages, and from the bridge at very high stages.

Winter Flow—Channel at section likely free from ice during winter, but will be affected by ice formation below the section.

Regulation—The river is dammed immediately above the section and one mile further up, for power purposes, and the Department of Railways and Canals operate a dam at the foot of Bob's Lake for regulating canal purposes.

Accuracy—The open-water rating will be very good.

Observer—Paul Griffin, Marion P.O.

Discharge Measurements of Tay River near Glen Tay in 1915

Date	Hydrographer	Width in Feet	Area of Section in Sq. Feet	Mean Velocity in Feet per Sec.	Gauge Height in Feet	Discharge in Sec-Feet	Discharge in Second-feet per Square Mile
July 10....	McLennan, C. C..	43	35	1.09	93.84	38	.....
Aug. 11....	“	41	39	1.30	93.96	51	.....
Sept. 14....	West, C. W.	43	35	1.25	93.84	43	.....
Oct. 14....	McLennan, C. C.	42	30	1.00	93.71	31	.....

Daily Gauge Height and Discharge of Tay River near Glen Tay for 1914-5

Drainage Area, 204 Square Miles

Day	November		December		January		February		March		April		May		June		July		August		September		October	
	November		December		January		February		March		April		May		June		July		August		September		October	
	Gauge Ht.	Dis- charge	Gauge Ht.	Dis- charge	Gauge Ht.	Dis- charge	Gauge Ht.	Dis- charge	Gauge Ht.	Dis- charge	Gauge Ht.	Dis- charge	Gauge Ht.	Dis- charge	Gauge Ht.	Dis- charge	Gauge Ht.	Dis- charge	Gauge Ht.	Dis- charge	Gauge Ht.	Dis- charge	Gauge Ht.	Dis- charge
	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.
1	93.75	34	94.42	102	93.82	41
2	93.75	34	94.17	79	94.05	65
3	93.75	34	94.17	79	94.05	64
4	93.75	34	94.38	98	94.05	66
5	93.78	37	94.13	75	94.05	66
6	93.82	41	94.13	75	94.05	64
7	93.86	45	94.07	68	93.98	58
8	93.96	56	94.09	70	93.98	58
9	94.01	62	94.13	75	93.71	30
10	94.01	62	94.09	70	93.71	30
11	93.96	56	94.09	70	93.98	58
12	93.96	56	94.09	70	93.98	58
13	93.86	45	94.11	72	93.98	58
14	93.82	41	94.07	68	93.71	30
15	93.80	39	94.17	68	93.98	58
16	93.80	39	94.05	66	93.96	56
17	93.92	52	94.07	68	93.94	54
18	93.80	39	94.09	70	93.94	54
19	94.13	75	94.11	72	92.94	54
20	94.13	75	94.11	72	92.94	54
21	94.17	79	94.09	70	93.98	58
22	94.17	79	94.05	66	93.98	58
23	94.07	68	94.05	66	93.94	54
24	94.34	94	94.05	66	93.94	54
25	93.80	39	94.05	66	93.94	54
26	93.80	39	94.05	66	93.94	54
27	93.80	39	94.01	62	93.94	54
28	94.51	114	94.07	68	93.94	54
29	93.80	39	94.13	75	93.96	56
30	94.46	108	94.09	70	93.96	56
31	94.17	79	94.05	66	93.94	56
	94.21	83	94.05	.....	94.30	91
	94.05	66	.....	.....	.....	.....

Monthly Discharge of Tay River near Glen Tay for 1914-5

Drainage Area 204 Square Miles

Month	Discharge in Second-feet			Discharge in Second-feet per Square Mile			Run-off
	Maximum	Minimum	Mean	Maximum	Minimum	Mean	Depth in Inches on Drainage Area
November (1914)	.....	.....	.....	.....	.....	.....	.....
December .	.....	.....	.....	.....	.....	.....	.....
January .. (1915)	.....	.....	.....	.....	.....	.....	.....
February .....	.....	.....	.....	.....	.....	.....	.....
March .....	.....	.....	.....	.....	.....	.....	.....
April .....	.....	.....	.....	.....	.....	.....	.....
May .....	.....	.....	.....	.....	.....	.....	.....
June .....	.....	.....	.....	.....	.....	.....	.....
July 10-31	56	36	42	.27	.18	.21	.17
August	131	34	69	.64	.17	.34	.39
September	102	62	72	.50	.30	.35	.39
October	91	30	55	.45	.15	.27	.31
The period	131	30	62	.64	.15	.30	1.26

York River near Bancroft

Location—At the highway bridge one and a half miles below Bancroft, near lots 53 and 54, west of the Hastings Road, Township of Faraday, County of Hastings.

Records Available—Discharge measurements made monthly from July, 1915. Daily gauge heights from July 16, 1915.

Drainage Area—374 square miles.

Gauge—Vertical standard gauge plates 0 to 6 ft. secured on the upstream face of the right bridge pier near the west corner.

Channel and Control—The channel is straight for 400 feet above and 250 feet below the section. The banks are high and sandy, not liable to overflow. The bed is composed of gravel. Flow takes place in two channels under the bridge at high stages, and in one channel at lower stages.

Discharge Measurements—Made from the bridge at all stages.

Winter Flow—Ice will materially affect the open-water relation of gauge heights to discharge.

Regulation—The dam at Bancroft gives very small storage, and the plants there do not use the entire flow. On account of the electrical plant working at night, and the other mills during the day, daily gauge readings give fairly accurate figures for the mean daily stage. Some of the tributary streams are controlled by dams for storage and driving purposes for the lumber industry.

Accuracy—As the river bed is composed of gravel, slight movement no doubt takes place without changing the general profile and section.

Observer—J. L. Churcher, Bancroft.

Discharge Measurements of York River near Bancroft in 1915

Date	Hydrographer	Width in Feet	Area of Section in Sq. Feet	Mean Velocity in Feet per Sec.	Gauge Height in Feet	Discharge in Sec-Feet	Discharge in Second-feet per Square Mile
July 16....	McLennan, C. C.	77	229	1.30	101.62	297	.....
Aug. 13....	“	77	224	1.11	101.50	247	.....
Sept. 10....	West, C. W.....	77	217	1.24	101.42	269	.....
Oct. 13....	McLennan, C. C.	76	212	1.16	101.35	246	.....

Monthly Discharge of York River near Bancroft for 1914-5

Drainage Area, 374 Square Miles

Month	Discharge in Second-feet			Discharge in Second-feet per Square Mile			Run-off
	Maximum	Minimum	Mean	Maximum	Minimum	Mean	Depth in Inches on Drainage Area
November (1914)	.....	.....	.....	.....	.....	.....	.....
December ..	.....	.....	.....	.....	.....	.....	.....
January .. (1915)	.....	.....	.....	.....	.....	.....	.....
February .....	.....	.....	.....	.....	.....	.....	.....
March .....	.....	.....	.....	.....	.....	.....	.....
April .....	.....	.....	.....	.....	.....	.....	.....
May .....	.....	.....	.....	.....	.....	.....	.....
June .....	.....	.....	.....	.....	.....	.....	.....
July 16-31	301	235	267	.81	.63	.71	.42
August	379	237	293	1.01	.63	.78	.90
September	292	205	269	.78	.55	.72	.80
October	336	233	258	.90	.62	.69	.80
The period	379	205	272	1.01	.55	.73	2.92

Regular Stations
NORTHERN ONTARIO DISTRICT

River	Location	Drain- age Area Sq. Miles	Township	County or District
aux Sables	at Massey	524	Salter	Sudbury Dist.
Blanche	near Englehart	230	Evanturel	Timiskaming Dist.
Frederickhouse	at Frederickhouse	1,252	Clute	" "
Kabuskong	at Bonfield	67	Bonfield	Nipissing Dist.
Kagawong	at Kagawong	94	Allan	Manitoulin Island.
Maganetawan, North.	near Burk's Falls	107	Armour	Parry Sound Dist.
" South.	" " "	257	"	" "
Mississagi	at Mississagi	3,650	Mississagi Indian Reserve	Algoma Dist.
Montreal	at Latchford	2,450	Coleman	Timiskaming Dist.
Muskoka, N. Branch.	near Port Sydney	560	Stephenson	Muskoka Dist.
Muskoka, S. Branch.	at Tretheway's Falls ..	668	Draper	" "
Seguin	near Parry Sound	380	McDougal	Parry Sound Dist.
South	near Powassan	305	Himsworth	Parry Sound Dist.
Spanish	at Espanola	4,490	Merritt	Sudbury Dist.
Sturgeon	at Smoky Falls	2,250	Field	Nipissing District.
Vermilion	near Whitefish	1,580	Graham	Sudbury Dist.
Wanapitei	near Wanapitei	940	Dryden	" "

aux Sables River at Massey

Location—About 800 feet upstream from C.P. Ry. bridge, and $\frac{1}{4}$ mile north-east of railway station, in the Village of Massey, Township of Salter, Sudbury District.

Records Available—Monthly discharge measurements from July to October, 1915.
Daily gauge heights from June 10 to October 31, 1915.

Drainage Area—524 square miles.

Gauge—Vertical steel staff with enamelled face, graduated in feet and inches, fastened to rock on left shore 400 feet above railway bridge. Zero of the gauge (elev. 15.00 feet) is referred to bench mark (elev. 29.76 feet) painted on top of rock near gauge.

Channel and Control—Straight for 1,000 feet above and 500 feet below the gauging station to a rapid. Both banks are high, rocky, wooded and are not liable to overflow. The bed of the stream is composed of clay and gravel, practically permanent. The velocity is moderate, and one channel exists at all stages.

Discharge Measurements—Made by wading during low water periods. At high stages measurements are made from boat with a Price current meter.

Regulation—The operation of logging dams above cause fluctuations in gauge heights during the log-driving season.

Observer—Jas. Blight, Massey.

Discharge Measurements of aux Sables River at Massey in 1915

Date	Hydrographer	Width in Feet	Area of Section in Sq. Feet	Mean Velocity in Feet per Sec.	Gauge Height in Feet	Discharge in Sec-Feet	Discharge in Second-feet per Square Mile
July 15....	Murray, W. S..	44	117	2.53	17.43	297(a)	.....
Aug. 14....	" ..	63	106	2.99	17.08	318	.....
Sept. 1....	" ..	39	55	2.36	15.33	131	.....

(a) Measurement taken from raft 400 feet below regular section

Daily Gauge Height and Discharge of aux Sables River at Massey for 1914-5

Drainage Area, 524 Square Miles

Day	November		December		January		February		March		April		May		June		July		August		September		October	
	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge
	Feet	Sec-ft.	Feet	Sec-ft.	Feet	Sec-ft.	Feet	Sec-ft.	Feet	Sec-ft.	Feet	Sec-ft.	Feet	Sec-ft.	Feet	Sec-ft.	Feet	Sec-ft.	Feet	Sec-ft.	Feet	Sec-ft.	Feet	Sec-ft.
1	26.92	2800	16.04	184	15.33	131	19.75	647
2	24.50	2025	16.00	181	15.33	131	19.33	575
3	23.50	1705	16.00	181	15.33	131	18.95	516
4	19.25	562	15.91	174	15.33	131	19.04	529
5	15.91	603	15.91	174	15.25	125	19.62	624
6	19.58	616	15.83	167	15.25	125	20.16	723
7	19.50	603	15.75	161	15.25	125	20.16	723
8	19.50	603	17.41	312	15.25	125	19.87	669
9	19.33	575	17.79	357	15.25	125	19.62	623
10	19.25	562	17.50	322	15.25	125	19.41	588
11	23.92	1840	19.17	549	17.37	308	15.25	125
12	24.25	1945	18.75	485	17.25	295	15.25	125
13	21.71	1135	18.33	426	17.25	295	15.25	125
14	26.13	2550	18.33	426	17.25	295	15.25	125
15	24.09	1895	17.75	352	17.25	295	15.33	131
16	23.58	1730	17.17	287	17.12	282	19.66	630
17	23.20	1610	17.13	283	16.96	266	15.45	140
18	24.34	1975	17.12	282	16.83	253	15.54	146
19	23.70	1770	17.12	282	16.75	245	15.58	149
20	21.54	1080	16.92	262	16.54	226	15.83	167
21	25.83	2450	16.79	249	16.37	210	16.04	184
22	24.08	1890	16.75	245	16.16	194	16.20	197
23	25.66	2395	16.67	237	16.12	191	16.29	204
24	24.34	1975	16.62	232	15.99	180	16.33	209
25	24.04	1890	16.50	232	15.87	171	16.41	214
26	23.42	1680	16.42	215	15.70	157	20.91	894
27	21.09	945	16.38	211	15.67	155	22.50	1386
28	23.92	2480	16.29	204	15.62	151	21.50	1066
29	26.04	2520	16.21	198	15.45	140	20.75	852
30	26.42	2640	16.17	195	15.45	140	20.33	756
31	15.41	137	.....	.....	.....	.....

Monthly Discharge of aux Sables River at Massey for 1914-5

Drainage Area 524 Square Miles

Month	Discharge in Second-feet			Discharge in Second-feet per Square Mile			Run-off
	Maximum	Minimum	Mean	Maximum	Minimum	Mean	Depth in Inches on Drainage Area
November (1914)	.....	.....	.....	.....	.....	.....	.....
December	.....	.....	.....	.....	.....	.....	.....
January .. (1915)	.....	.....	.....	.....	.....	.....	.....
February .....	.....	.....	.....	.....	.....	.....	.....
March .....	.....	.....	.....	.....	.....	.....	.....
April .....	.....	.....	.....	.....	.....	.....	.....
May .....	.....	.....	.....	.....	.....	.....	.....
June 10-30	2,640	945	1,947	5.04	1.80	3.72	2.90
July	2,800	191	538	5.34	.36	1.03	1.19
August	357	137	219	.68	.26	.42	.48
September	1,386	125	287	2.64	.24	.55	.61
October	756	383	569	1.44	.76	1.09	1.26
The period	2,800	125	521	5.34	.24	.99	6.44

Blanche River near Englehart

Location—At the highway bridge near the High Falls, $3\frac{1}{2}$ miles northwest of the Town of Englehart, north half of lot 12, concession 3, Township of Evanturel, Temiskaming District.

Records Available—Monthly discharge measurements, August, 1914, to October, 1915.
Daily gauge heights, October 8, 1914, to October 31, 1915.

Drainage Area—430 square miles.

Gauge—Vertical steel staff with enamelled face, graduated in feet and inches, and located on the southwest corner of the wing wall of the bridge. The zero on the gauge (elev. 10.00) is referred to a bench mark (elev. 23.39), painted on a prominent rock on the right bank, 75 feet below the bridge.

Channel—At a point 200 feet above the station, the river curves from the right and then flows straight, up to a point 700 feet below the station. Both banks are high, rocky, wooded, and will not overflow. The bed of the stream is composed of clay, practically permanent. The current is very slow, flowing through 2 channels at low stages and 3 channels during high water periods.

Discharge Measurements—Made from the highway bridge with a Price current meter.

Regulation—A temporary dam is built above the station during the summer months. This dam is used for storing water during the period when the river is used for log driving. The gauge heights at the section are therefore affected during the storage and log driving periods.

Winter Flow—During the winter months measurements are made through the ice to determine the winter discharge. The relation of gauge height to discharge is seriously affected by ice.

Accuracy—Rating curve fairly well defined between gauge heights 10.50 feet and 12.00 feet.

Observer—W. Antram, Englehart.

Discharge Measurements of Blanche River near Englehart in 1915

Date	Hydrographer	Width in Feet	Area of Section in Sq. Feet	Mean Velocity in Feet per Sec.	Gauge Height in Feet	Discharge in Sec-Feet	Discharge in Second-feet per Square Mile
Jan. 9....	Murray, W. S..	40	220	0.40	10.50	90(a)	.....
Feb. 15....	"	55	369	0.24	10.56	89(b)	.....
Mar. 15....	"	60	402	0.21	10.75	83(c)	.....
May 10....	"	111	1,041	1.22	14.33	1,273(d)	.....
June 3....	"	66	646	0.55	10.91	353	.....
July 9....	"	106	780	0.98	12.25	766(d)	.....
Aug. 4....	"	66	617	0.44	10.56	275	.....
Sept. 22....	"	66	614	0.47	10.52	291	.....
Oct. 22....	"	111	754	0.90	12.00	685	.....

(a) Ice measurement 300 feet below regular station.

(b) Ice " 250 " " "

(c) Measurement 250 feet below regular section, slush ice on control.

(d) Logs on control.

Daily Gauge Height and Discharge of Blanche River near Englehart for 1914-5

Drainage Area, 430 Square Miles

Day	November		December		January		February		March		April		May		June		July		August		September		October	
	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge
	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.
1	10.75	325	10.42	140	10.50	125	10.58	120	10.67	140	11.08	420	14.00	1290	11.50	540	11.42	520	11.50	540	10.91	370	10.91	370
2	10.67	305	10.58	180	10.33	125	10.42	120	10.67	140	11.08	420	14.00	1290	11.25	465	11.67	590	11.42	520	10.91	370	10.83	350
3	10.75	305	11.00	250	10.58	125	10.42	120	10.58	140	11.08	420	14.67	1470	11.25	465	11.83	640	11.42	520	10.83	350	10.75	325
4	10.83	300	11.00	250	10.42	130	10.42	120	10.67	145	10.92	375	14.75	1515	11.00	395	11.75	615	10.58	280	10.83	350	10.83	350
5	10.83	290	10.83	230	10.50	150	10.42	120	10.67	145	10.92	375	14.50	1440	10.83	350	11.92	665	10.58	280	10.83	350	10.91	370
6	10.92	280	10.83	200	10.58	190	10.50	120	10.75	160	11.08	420	14.00	1290	11.00	395	12.08	715	10.67	305	10.75	325	10.58	280
7	10.83	260	10.75	160	10.92	210	10.50	120	10.75	160	11.25	465	14.67	1470	11.00	396	12.50	840	10.75	325	10.91	370	11.00	395
8	10.92	240	10.75	150	10.83	150	10.50	120	10.75	190	11.08	420	14.67	1470	10.92	375	12.33	790	10.75	325	10.92	375	11.00	395
9	10.83	220	10.75	130	10.50	130	10.42	130	11.25	270	11.17	445	15.00	1590	11.00	395	12.42	815	10.83	350	10.83	350	10.91	370
10	10.75	200	10.50	130	10.58	120	10.50	150	11.25	270	11.25	465	14.67	1470	10.92	375	12.25	765	10.75	325	10.83	350	11.00	395
11	10.83	185	10.33	125	10.67	140	10.75	160	11.17	250	13.33	1090	14.83	1540	10.92	375	12.25	765	10.67	305	10.75	325	11.16	440
12	10.83	180	10.58	125	10.75	160	10.75	165	10.92	210	12.50	840	14.67	1470	12.08	715	12.08	715	10.67	305	10.75	325	11.25	465
13	10.58	180	10.67	125	10.75	160	10.75	160	10.92	180	11.58	565	14.25	1365	12.17	740	11.92	665	10.58	280	10.91	370	11.50	540
14	10.67	190	10.67	125	10.75	170	10.67	150	10.75	160	11.92	665	13.58	1465	12.00	690	11.92	665	10.58	280	11.16	440	11.25	465
15	10.75	210	10.50	125	10.67	165	10.67	140	10.75	160	11.92	665	12.67	890	11.83	640	12.00	690	10.75	325	10.91	370	11.25	465
16	10.83	220	10.50	125	10.83	165	10.58	135	11.00	170	12.00	690	12.75	915	12.00	690	11.92	665	10.83	350	10.91	370	11.16	440
17	10.83	220	10.67	120	10.75	165	10.58	145	11.00	210	11.58	565	13.00	990	12.08	715	12.00	690	10.83	350	11.00	395	11.16	440
18	10.67	210	10.58	110	10.75	160	10.75	160	11.00	260	11.67	590	12.67	890	11.92	665	12.00	690	10.58	280	11.00	395	11.25	465
19	10.67	180	10.58	110	10.75	160	10.75	160	11.00	260	11.67	590	12.00	690	12.17	740	11.92	665	10.75	325	10.91	370	11.33	490
20	10.75	180	10.58	110	10.67	155	10.67	150	11.08	270	11.42	520	11.08	420	12.17	740	11.83	640	10.75	325	11.08	420	11.25	465
21	10.75	190	10.58	100	10.58	135	10.67	145	10.75	280	11.67	590	11.58	565	12.00	690	11.67	590	10.67	305	11.00	395	11.25	465
22	10.75	190	10.67	90	10.58	125	10.58	140	11.00	300	11.50	540	11.83	640	11.67	590	11.58	565	10.66	300	10.83	350	11.33	490
23	10.67	180	10.58	90	10.50	120	10.67	140	10.83	390	11.42	520	11.33	490	11.67	590	11.75	615	10.75	325	10.75	325	11.33	490
24	10.67	180	10.42	85	10.50	130	10.58	140	11.00	395	11.92	665	11.42	520	11.50	540	11.92	665	10.75	325	11.00	395	11.25	465
25	10.67	180	10.58	80	10.58	140	10.67	135	11.00	395	12.00	690	11.50	540	11.33	490	11.92	665	10.83	350	10.91	370	11.25	465
26	10.75	175	10.58	85	10.42	120	10.58	135	11.00	395	13.42	1115	11.33	490	11.50	540	11.83	640	10.83	350	11.25	465	11.33	490
27	10.67	170	10.58	90	10.42	120	10.67	140	11.00	395	13.50	1140	12.00	690	11.33	490	11.67	590	10.75	325	11.25	465	11.25	465
28	10.67	165	10.58	105	10.50	120	10.67	140	11.00	395	13.33	1090	11.75	615	11.50	540	11.75	615	10.75	325	11.16	440	11.33	490
29	10.58	160	10.17	125	10.42	120	.....	.....	11.00	395	13.42	1115	11.67	590	11.50	540	11.53	565	10.83	350	11.00	395	11.25	465
30	10.67	150	10.83	145	10.50	120	.....	.....	11.00	395	14.00	1290	11.50	540	11.33	490	11.67	590	11.00	395	11.08	420	11.16	440
31	.....	.....	10.42	130	10.50	120	.....	.....	11.00	395	.....	.....	11.42	520	.....	.....	11.75	615	11.00	395	.....	.....	11.16	440

NOTE.—Relation of gauge height to discharge affected by ice from Nov. 3rd, 1914, to March 22nd, 1915; discharge for the period estimated from observer's notes, discharge measurements and climatologic records.

Monthly Discharge of Blanche River near Englehart for 1914-5

Drainage Area, 430 Square Miles

Month	Discharge in Second-feet			Discharge in Second-feet per Square Mile			Run-off
	Maximum	Minimum	Mean	Maximum	Minimum	Mean	Depth in Inches on Drainage Area
November.(1914)	325	150	214	.76	.35	.50	.56
December "	250	80	134	.58	.19	.31	.36
January .. (1915)	210	120	143	.49	.28	.33	.38
February	165	120	138	.38	.28	.32	.33
March.....	395	140	258	.92	.33	.60	.69
April	1,290	375	657	3.00	.87	1.53	1.71
May.....	1,590	420	975	3.70	.98	2.27	2.62
June.....	740	350	545	1.72	.81	1.27	1.42
July.....	840	520	662	1.95	1.21	1.54	1.78
August	540	280	343	1.26	.65	.80	.92
September	465	325	379	1.08	.76	.88	.98
October	540	280	434	1.26	.65	1.01	1.16
The year	1,590	80	409	3.70	.19	.95	12.91

Frederickhouse River at Frederickhouse

Location—On the T.C. Ry. bridge at the Frederickhouse station, Township of Clute, Sudbury District, 6 miles west of the Town of Cochrane.

Records Available—Monthly discharge measurements from July to October, 1915. Daily gauge readings from July 7 to October 31, 1915.

Drainage Area—1,260 square miles.

Gauge—Vertical steel staff with enamelled face, graduated in feet and inches, and fastened to downstream side of right abutment. Zero of gauge (elev. 9.00 feet) is referred to a bench mark (elev. 10.00 feet) on top of base of same abutment, to which gauge is connected.

Channel and Control—The channel is straight and consists of a number of rapids for about 1 mile above and below the station. The banks are high and wooded, and not liable to overflow. The bed of the stream is composed of clay and boulders, and is shifting. The velocity is high.

Discharge Measurements—Made from bridge with a Price current meter.

Regulation—Temporary dams on river above used for log driving cause fluctuations at gauge.

Observer—Gaudias LaRochelle, Frederickhouse.

Discharge Measurements of Frederickhouse River at Frederickhouse in 1915

Date	Hydrographer	Width in Feet	Area of Section in Sq. Feet	Mean Velocity in Feet per Sec.	Gauge Height in Feet	Discharge in Sec-Feet	Discharge in Second-feet per Square Mile
Jan. 10....	Murray, W. S..	55	244	2.21	.....	539(a)	.....
July 7....	" ..	191	630	4.28	11.79	2,703	.....
Aug. 6....	" ..	190	293	2.56	10.00	751	.....
Sept. 22....	" ..	190	275	2.15	9.90	591	.....

(a) Ice measurement half mile above regular section ; one foot of slush and water on ice.

Drainage Area 1,260 Square Miles

[illegible]

Monthly Discharge of Frederickhouse River at Frederickhouse for 1914-5

Drainage Area, 1,260 Square Miles

Month	Discharge in Second-feet			Discharge in Second-feet per Square Mile			Run-off
	Maximum	Minimum	Mean	Maximum	Minimum	Mean	Depth in Inches on Drainage Area
November. (1914)	.....	.....	.....	.....	.....	.....	.....
December ..	.....	.....	.....	.....	.....	.....	.....
January .. (1915)	.....	.....	.....	.....	.....	.....	.....
February .....	.....	.....	.....	.....	.....	.....	.....
March .....	.....	.....	.....	.....	.....	.....	.....
April .....	.....	.....	.....	.....	.....	.....	.....
May .....	.....	.....	.....	.....	.....	.....	.....
June.....	.....	.....	.....	.....	.....	.....	.....
July 7-31.....	2,665	960	1,681	2.12	.76	1.33	1.40
August	920	530	654	.73	.42	.52	.60
September	2,040	460	775	1.62	.37	.62	.69
October.....	3,095	1,910	2,606	2.46	1.52	2.07	2.39
The period.....	3,095	460	1,422	2.46	.37	1.13	4.78

Kabuskong River at Bonfield

Location—About 350 feet below the dam on Lake Nasbonsing, and about $\frac{1}{4}$ mile northwest of Bonfield station on C.P. Ry., lot 10, concession 8, Township of Bonfield, Nipissing District.

Records Available—Monthly discharge measurements from June to October, 1915. Daily gauge heights from July 11 to Oct. 31, 1915.

Drainage Area—67 square miles.

Gauge—Vertical steel staff with enamelled face, graduated in feet and inches, and fastened to a crib which acts as one of the supports for the log chute 100 feet upstream from gauging station. Zero of gauge (elev. 77.00 feet) is referred to bench mark (elev. 82.48 feet) painted on a rock on left shore 50 feet below gauge.

Channel and Control—Straight for about 50 feet above and 30 feet below the gauging station to the rapid. Banks are fairly high, rocky, wooded, and will not overflow. The bed of the stream is composed of clay and loose rock, slightly shifting.

Discharge Measurements—Made by wading with a small Price current meter.

Regulation—The flow is controlled by the dam above, the records only showing leakage through the dam. During the log driving period the water is diverted through the log chute, and measurements will be made here to determine the flow.

Observer—J. C. Lamothe, Bonfield.

Discharge Measurements of Kabuskong River at Bonfield in 1915

Date	Hydrographer	Width in Feet	Area of Section in Sq. Feet	Mean Velocity in Feet per Sec.	Gauge Height in Feet	Discharge in Sec-Feet	Discharge in Second-feet per Square Mile
June 4....	Murray, W.S....	17	18	1.32	78.26	24	.....
July 10....	“ ..	19	19	1.72	78.26	31	.....
Sept. 22....	“ ..	19	21	1.55	78.25	32	.....

Daily Gauge Height and Discharge of Kabuskong River at Bonfield for 1914-5

Drainage Area, 67 Square Miles

Day	November		December		January		February		March		April		May		June		July		August		September		October	
	November		December		January		February		March		April		May		June		July		August		September		October	
	Gauge Ht.	Dis- charge	Gauge Ht.	Dis- charge	Gauge Ht.	Dis- charge	Gauge Ht.	Dis- charge	Gauge Ht.	Dis- charge	Gauge Ht.	Dis- charge	Gauge Ht.	Dis- charge	Gauge Ht.	Dis- charge	Gauge Ht.	Dis- charge	Gauge Ht.	Dis- charge	Gauge Ht.	Dis- charge	Gauge Ht.	Dis- charge
	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	78.37	35	78.37	35	78.37	35
2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	78.37	35	78.37	35	78.37	35
3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	78.41	36	78.37	35	78.37	35
4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	78.41	36	78.37	35	78.37	35
5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	78.41	36	78.37	35	78.37	35
6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	78.48	38	78.37	35	78.37	35
7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	78.37	35	78.36	35	78.37	35
8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	78.37	35	78.36	35	78.35	35
9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	78.37	35	78.36	35	78.35	35
10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	78.34	34	78.33	34	78.33	34
11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	78.37	35	78.33	34	78.33	34
12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	78.37	35	78.35	35	78.33	34
13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	78.37	35	78.37	35	78.27	32
14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	78.37	35	78.33	35	78.29	33
15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	78.33	34	78.33	34	78.29	33
16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	78.37	35	78.25	31	78.29	33
17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	78.37	35	78.25	31	78.29	33
18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	78.34	34	78.27	32	78.29	33
19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	78.37	35	78.27	32	78.29	33
20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	78.35	35	78.33	34	78.33	34
21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	78.35	35	78.33	34	78.33	34
22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	78.35	35	78.33	34	78.33	34
23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	78.37	35	78.33	34	78.33	34
24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	78.37	35	78.33	34	78.33	34
25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	78.37	35	78.33	34	78.33	34
26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	78.37	35	78.33	34	78.33	34
27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	78.37	35	78.37	35	78.33	34
28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	78.42	37	78.37	35	78.33	34
29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	78.42	37	78.37	35	78.33	34
30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	78.42	37	78.37	35	78.33	34
31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	78.42	37	78.37	35	78.33	34

Monthly Discharge of Kabuskong River at Bonfield for 1914-5

Drainage Area, 67 Square Miles

Month	Discharge in Second-feet			Discharge in Second-feet per Square Mile			Run-off
	Maximum	Minimum	Mean	Maximum	Minimum	Mean	Depth in inches on Drainage Area
November (1914).	.....	.....	.....	.....	.....	.....	.....
December ..	.....	.....	.....	.....	.....	.....	.....
January .. (1915).	.....	.....	.....	.....	.....	.....	.....
February .....	.....	.....	.....	.....	.....	.....	.....
March.....	.....	.....	.....	.....	.....	.....	.....
April .....	.....	.....	.....	.....	.....	.....	.....
May.....	.....	.....	.....	.....	.....	.....	.....
June .....	.....	.....	.....	.....	.....	.....	.....
July 11-31.....	37	31	35	.55	.46	.52	.41
August	38	33	35	.57	.49	.52	.60
September.....	35	31	34	.52	.46	.51	.57
October	35	32	34	.52	.48	.51	.59
The period.....	38	31	35	.57	.46	.52	2.17

Kagawong River at Kagawong

Location—150 feet below Kagawong Falls in the Village of Kagawong, Township of Billings, Manitoulin Island.

Records Available—Monthly discharge measurements from July to October, 1915. Daily gauge heights from July 11 to October 31, 1915.

Drainage Area—94 square miles.

Gauge—Vertical steel staff with enamelled face, graduated in feet and inches, connected to a 2 x 4 scantling and attached to a large rock in stream 20 feet below the gauging station. Zero of the gauge (elev. 10.00 feet) is referred to a bench mark (elev. 15.86 feet) painted on a rock on right bank at the gauging station. The initial point for soundings is located on an iron post on the left bank opposite the bench mark.

Channel—Straight for about 100 feet above and below the gauging station. Both banks are high and wooded, and are not liable to overflow. The bed of the stream is composed of rock and clay, slightly shifting, one channel existing at all stages.

Discharge Measurements—Made by wading with a small Price current meter.

Regulation—The flow is controlled by the dam 200 feet above the falls.

Observer—Stuart Hunt, Kagawong.

Discharge Measurements of Kagawong River at Kagawong in 1915

Date	Hydrographer	Width in Feet	Area of Section in Sq. Feet	Mean Velocity in Feet per Sec.	Gauge Height in Feet	Discharge in Sec-Feet	Discharge in Second-feet per Square Mile
July 13....	Murray, W. S..	19	11	3.15	11.00	36	.....
Aug. 19....	" ..	19	19	2.64	11.23	51	.....
Sept. 28....	" ..	18	12	2.15	10.81	25	.....
" 28....	" ..	18	12	1.90	10.81	22	.....
" 28....	" ..	19	19	3.23	11.16	60	.....
" 28....	" ..	24	38	4.17	11.59	159	.....

Monthly Discharge of Kagawong River at Kagawong for 1914-5

Drainage Area, 94 Square Miles

Month	Discharge in Second-feet			Discharge in Second-feet per Square Mile			Run-off
	Maximum	Minimum	Mean	Maximum	Minimum	Mean	Depth in Inches on Drainage Area
November (1914)	.....	.....	.....	.....	.....	.....	.....
December "	.....	.....	.....	.....	.....	.....	.....
January .. (1915)	.....	.....	.....	.....	.....	.....	.....
February .....	.....	.....	.....	.....	.....	.....	.....
March .....	.....	.....	.....	.....	.....	.....	.....
April.....	.....	.....	.....	.....	.....	.....	.....
May.....	.....	.....	.....	.....	.....	.....	.....
June.....	.....	.....	.....	.....	.....	.....	.....
July 11-31.....	41	41	41	.44	.44	.44	.34
August	75	41	56	.80	.44	.60	.69
September	65	24	34	.59	.26	.36	.40
October.....	68	19	38	.72	.20	.40	.46
The period	75	19	43	.80	.20	.46	1.89

Maganetawan River (North Branch) near Burk's Falls

Location—One mile north of Burk's Falls station, 200 feet upstream from the Grand Trunk Railway bridge, on lot 7, concession 10, Township of Armour, District of Parry Sound.

Records Available—Monthly discharge measurements from June to October, 1915.
Daily gauge readings from August 1 to October 31, 1915.

Drainage Area—107 square miles.

Gauge—Vertical steel staff with enamelled face fastened to a 2 x 4 scantling and connected to a wooden platform on the right shore 20 feet above gauging station. Zero of the gauge (elev. 27.09 feet) is referred to a bench mark (elev. 35.00 feet) painted on top of 5-ft. iron pipe 20 feet above gauging station.

Channel and Control—Straight for about 200 feet above and 100 feet below the gauging station to the falls. The banks are high and wooded, and are not liable to overflow. The bed of the stream is composed of clay and a few rocks, practically permanent. The velocity is moderate.

Discharge Measurements—Made by wading with a small Price current meter.

Accuracy—The rating curve is fairly well defined between limits, for which gauge height records are available.

Observer—Henry Stroud, Burk's Falls.

Discharge Measurements of Maganetawan River (North Branch) near Burk's Falls in 1915

Date	Hydrographer	Width in Feet	Area of Section in Sq. Feet	Mean Velocity in Feet per Sec.	Gauge Height in Feet	Discharge in Sec-Feet	Discharge in Second-feet per Square Mile
April 9....	Murray, W. S. ...	84	583	0.49	.....	284	1.72 (a)
June 12....	"	84	820	0.67	.....	551	3.34 (a)
July 23....	"	30	45	1.76	29.21	79	..... (b)
" 25....	"	32	56	1.45	29.17	82	..... (b)
Aug. 25....	"	43	92	1.14	29.59	105	.....
Sept. 13....	"	40	74	0.53	29.09	40	.....
" 14....	"	40	73	0.51	29.04	37	.....
" 14....	"	40	77	0.55	29.16	43	.....
Oct. 14....	"	48	106	1.30	29.88	138	.....

(a) Measurements made at Katrine Bridge.

(b) Measurement made 22 feet below gauge.

Drainage Area, 107 Square Miles

[illegible]

Monthly Discharge of Maganetawan River (North Branch) near Burk's Falls for 1914-5

Drainage Area, 107 Square Miles

Month	Discharge in Second-feet			Discharge in Second-feet per Square Mile			Run-off
	Maximum	Minimum	Mean	Maximum	Minimum	Mean	Depth in Inches on Drainage Area
November (1914).	.....	.....	.....	.....	.....	.....	.....
December ..	.....	.....	.....	.....	.....	.....	.....
January ..(1915).	.....	.....	.....	.....	.....	.....	.....
February .....	.....	.....	.....	.....	.....	.....	.....
March .....	.....	.....	.....	.....	.....	.....	.....
April.....	.....	.....	.....	.....	.....	.....	.....
May.....	.....	.....	.....	.....	.....	.....	.....
June .....	.....	.....	.....	.....	.....	.....	.....
July.....	.....	.....	.....	.....	.....	.....	.....
August	200	30	85	1.87	.28	.79	.91
September	63	8	32	.59	.07	.30	.33
October.....	273	89	159	2.55	.83	1.49	1.72
The period.....	273	8	93	2.55	.07	.87	2.96

Maganetawan River (South Branch) near Burk's Falls

Location—One-half mile south of Burk's Falls station, and 200 feet east of G.T. Ry. tracks on lot 8, concession 8, Township of Armour, Parry Sound District.

Records Available—Monthly discharge measurements from June to October, 1915. Daily gauge heights from August 1 to October 31, 1915.

Drainage Area—257 square miles.

Gauge—Vertical steel staff with enamelled face, graduated in feet and inches, fastened to 2 x 8 scantling wedged between two hardwood trees on the left shore 20 feet above gauging station. Zero of the gauge (elev. 22.00 feet) is referred to a bench mark (elev. 35.00 feet) painted on top of a 5-ft. iron pipe located near the gauge on the north branch of the river.

Channel and Control—Straight for about 250 feet above and 500 feet below the rapids. The banks are high and wooded, and are not liable to overflow. The current is moderate.

Discharge Measurements—Made by wading with a small Price current meter.

Regulation—Temporary dams above, which are used during log driving season, cause fluctuations at the gauge.

Accuracy—Rating curve fairly well defined between gauge heights 23.50 and 24.00 feet. There are not sufficient data available to define a good curve above and below these limits.

Observer—Henry Stroud, Burk's Falls.

Discharge Measurements of Maganetawan River (South Branch) near
Burk's Falls in 1915

Date	Hydrographer	Width in Feet	Area of Section in Sq. Feet	Mean Velocity in Feet per Sec.	Gauge Height in Feet	Discharge in Sec-Feet	Discharge in Second-feet per Square Mile
Feb. 10....	Murray, W.S ...	42	72	8.47	.....	610	89 (a)
Apr. 26.....	"	57	206	7.26	.....	1,496	219 (a)
July 23.....	"	63	120	2.03	23.51	243	(b)
" 24.....	"	61	90	2.06	23.50	187	(b)
Aug. 25.....	"	65	112	2.20	23.83	258	.....
Sept. 14.....	"	62	85	2.06	23.42	176	.....
" 14.....	"	62	86	2.05	23.42	176	.....
Oct. 15.....	"	65	122	2.28	23.97	278	.....

(a) Measurements at Knœffler's Falls, about 35 miles below the confluence of the North and South Branches of the Maganetawan River.
(b) Measurement made 18 feet below gauge.

Drainage Area 257 Square Miles

[illegible]

Monthly Discharge of Maganetawan River (South Branch) near Burk's Falls for 1914-5

Drainage Area, 257 Square Miles

Month	Discharge in Second-feet			Discharge in Second-feet per Square Mile			Run-off
	Maximum	Minimum	Mean	Maximum	Minimum	Mean	Depth in Inches on Drainage Area
November (1914).	.....	.....	.....	.....	.....	.....	.....
December. ..	.....	.....	.....	.....	.....	.....	.....
January ..(1915).	.....	.....	.....	.....	.....	.....	.....
February .....	.....	.....	.....	.....	.....	.....	.....
March.....	.....	.....	.....	.....	.....	.....	.....
April.....	.....	.....	.....	.....	.....	.....	.....
May.....	.....	.....	.....	.....	.....	.....	.....
June .....	.....	.....	.....	.....	.....	.....	.....
July .....	.....	.....	.....	.....	.....	.....	.....
August	251	159	206	.98	.62	.80	.92
September.....	210	172	184	.82	.67	.72	.80
October.....	497	183	312	1.93	.71	1.21	1.39
The period.....	497	159	234	1.93	.62	.91	3.11

Mississagi River at Mississagi

Location—At the C. P. Ry. bridge, near Mississagi Flag Station, Mississagi Indian Reserve, four miles west of the Town of Blind River, Township of Cobden, Algoma District.

Records Available—Monthly discharge measurements, July, 1913, to March, 1915.

Drainage Area—3,650 square miles.

Gauge—The elevation of the surface of the water is ascertained by means of a level from a bench mark (elev. 20.00) established on a rock on the left bank of the river 600 feet above the bridge and 100 feet above the rapids.

Channel—Straight for about 400 feet above and 2,000 feet below the station. Both banks are high, rocky, wooded, and will not overflow. The bed of the stream is composed of rock and is permanent. The current is swift, flowing through one channel at low stages and two channels during high water periods.

Discharge Measurements—Made from the railway bridge with a Price current meter.

Remarks—This station has been discontinued on account of back water from Georgian Bay. New section established at Iron Bridge, about 15 miles upstream.

Discharge Measurements of Mississagi River at Mississagi in 1915

Date	Hydrographer	Width in Feet	Area of Section in Sq. Feet	Mean Velocity in Feet per Sec.	Gauge Height in Feet	Discharge in Sec-Feet	Discharge in Second-feet per Square Mile
Jan. 13....	Murray, W. S..	170	1,619	0.83	12.47	1,350(a)	.37
Feb. 18....	" ..	165	1,175	1.04	12.17	1,223(a)	.34
Mar. 17....	" ..	163	1,126	1.05	11.87	1,187(a)	.33
Sept. 30....	" ..	185	3,650	2.53	38.94	9,258(b)	.....

(a) Ice measurement at boat section.

(b) Measurement made at Iron Bridge.

Montreal River at Latchford

Location—At the Temiskaming and Northern Ontario Railway Bridge, 300 feet below the Government dam, in the Town of Latchford, Township of Coleman, Temiskaming District.

Records Available—Monthly discharge measurements, August, 1914, to March, 1915.
Daily gauge heights, April 1, 1914, to July 31, 1915.

Drainage Area—2,450 square miles.

Gauge—Vertical steel staff, located on the left downstream side of the Government dam. This is a Dominion Government gauge graduated to feet and hundredths. The zero on the gauge (elev. 892.43) is referred to a bench mark (elev. 912.42) which is painted with red paint near the centre of the dam.

Channel—Straight for about 300 feet above and 300 feet below the station. The banks are high, rocky, and will not overflow. The bed is composed of sand and rock, slightly shifting. The river is fast and flows through two channels at low stages and three channels during high water periods.

Discharge Measurements—Made from the downstream side of the bridge with a Price current meter.

Regulation—The operation of the Government dam above causes fluctuations at the section and interferes with the natural flow of the river.

Winter Flow—The river is open at the station during the winter months, but frozen above the dam and below the section.

Accuracy—Conditions are unfavorable for making accurate discharge measurements. The station rating curve is poor, and therefore no attempt has been made to compute the daily discharge.

Co-operation—Records will be obtained from the Department of Public Works, Ottawa, who operate the dam above.

Remarks—This station has been discontinued.

Observer—Geo. Schneider, Latchford.

Discharge Measurements of Montreal River at Latchford in 1915

Date	Hydrographer	Width in Feet	Area of Section in Sq. Feet	Mean Velocity in Feet per Sec.	Gauge Height in Feet	Discharge in Sec-Feet	Discharge in Second-feet per Square Mile
Jan. 8....	Murray, W. S...	209	259	5.32	.....	1,381	.56
Feb. 13....	"	228	423	3.22	.....	1,380	.56
Mar. 13....	"	223	243	5.11	.....	1,242	.51

Muskoka River (North Branch) near Port Sydney

Location—At the highway bridge near the Village of Port Sydney and $\frac{1}{4}$ mile below Mary Lake, on lot 25, concession 5, Township of Stephenson, Muskoka District.

Records Available—Monthly discharge measurements from April to October, 1915.
Daily gauge heights from April 16 to Oct. 31, 1915.

Drainage Area—560 square miles.

Gauge—Vertical steel staff with enamelled face graduated in feet and inches and fastened to abutment on left upstream side of bridge. Zero of gauge (elev. 7.00 feet) is referred to a bench mark (elev. 24.78 feet) painted on top of right abutment, downstream side.

Channel—Straight for about 1,500 feet above and 500 feet below gauging station. Both banks are high, wooded, and not liable to overflow. The bed of the channel is composed of clay and gravel.

Discharge Measurements—Made from highway bridge with a small Price current meter.

Regulation—The operation of dam at Mary Lake during certain periods of the year will cause fluctuation in stage at the gauge.

Accuracy—The rating curve is fairly well defined, and estimates of discharge are fair.

Observer—H. McInnes, Port Sydney.

Discharge Measurements of Muskoka River (North Branch) near Port Sydney in 1915

Date	Hydrographer	Width in Feet	Area of Section in Sq. Feet	Mean Velocity in Feet per Sec.	Gauge Height in Feet	Discharge in Sec-Feet	Discharge in Second-feet per Square Mile
Apr. 13....	Murray, W. S...	58	484	6.28	11.75	3,040	.....
May 18....	"	54	327	2.23	9.00	728	.....
June 16....	"	57	379	3.73	9.88	1,415	.....
July 27....	"	46	260	0.46	7.83	120	.....
Aug. 27....	"	45	288	1.78	8.48	513	.....
Sept. 10....	"	47	266	0.62	7.95	168	.....
Oct. 14....	"	55	360	3.93	9.60	1,417	.....

Drainage Area, 560 Square Miles

[illegible]

Monthly Discharge of Muskoka River (North Branch) near Port Sydney for 1914-5

Drainage Area 560 Square Miles

Month	Discharge in Second-feet			Discharge in Second-feet per Square Mile.			Run-off
	Maximum	Minimum	Mean	Maximum	Minimum	Mean	Depth in Inches on Drainage Area.
November (1914)	.....	.....	.....	.....	.....	.....	.....
December, "	.....	.....	.....	.....	.....	.....	.....
January .. (1915)	.....	.....	.....	.....	.....	.....	.....
February .....	.....	.....	.....	.....	.....	.....	.....
March .....	.....	.....	.....	.....	.....	.....	.....
April .....	.....	.....	.....	.....	.....	.....	.....
May .....	.....	.....	.....	.....	.....	.....	.....
June 16-31.....	1,447	452	953	2.85	.81	1.70	.95
July	959	130	371	1.71	.23	.66	.76
August	721	130	292	1.29	.23	.52	.60
September.....	952	130	249	1.70	.23	.45	.50
October	1,320	296	821	2.36	.53	1.47	1.69
The period.....	1,447	130	491	2.85	.23	.88	4.50

Muskoka River (South Branch) at Tretheway's Falls

Location—At small steel highway bridge known as Tretheway's Falls Bridge, about 1 mile south of the Muskoka Falls Post Office and about 7 miles south of the Town of Bracebridge, Township of Draper, Muskoka District.

Records Available—Monthly discharge measurements, August, 1912, to October, 1915. Daily gauge heights, June 4, 1914, to October 31, 1915.

Drainage Area—668 square miles.

Gauge—As there is no available place for establishing a permanent staff gauge, a bench mark (elevation 25.00), painted on a stringer, on the up-stream side of the bridge, is used in ascertaining the water elevation, by measuring down to the surface of the stream with a graduated staff. It is referred to a bench mark (elevation 33.08) painted on a large rock on the right bank, 90 feet to the right of the downstream side of the bridge.

Channel and Control—Straight for about 300 feet above and 300 feet below the station. The banks are fairly high, rocky and wooded and will not overflow. The current is very swift and the bed of stream is rough and rocky, with a heavy slope about 250 feet below the section.

Discharge Measurements—Made from the upstream side of the bridge with a Price current meter and a stay line.

Winter Flow—The gauge is located where the current is swift and ice seldom forms across the river for the entire width. The relation of gauge height to discharge is not affected by ice.

Accuracy—Measurements made at Black's Bridge 1 mile above, were used in conjunction with those made at Tretheway's Falls, and a fairly well-defined rating curve has been established. Open water curve used throughout the year.

Observer—Wesley Morrow, Muskoka Falls.

Discharge Measurements of Muskoka River (South Branch) at Tretheway's Falls in 1915

Date	Hydrographer	Width in Feet	Area of Section in Sq. Feet	Mean Velocity in Feet per Sec.	Gauge Height in Feet	Discharge in Sec-Feet	Discharge in Second-feet per Square Mile
April 12....	Murray, W. S...	53	312	6.29	16.80	1,959	.....
" 23....	"	50	330	6.25	16.85	2,067	.....
" 24....	"	89	1,622	1.30	16.85	2,113(a)	.....
May 19....	"	50	231	3.42	14.92	790	.....
" 19....	"	89	1,411	0.63	14.92	902(a)	.....
" 20....	"	50	242	4.14	15.00	1,002	.....
June 15....	"	50	300	6.36	16.20	1,910	.....
" 15....	"	89	1,566	1.08	16.20	1,686(a)	.....
July 28....	"	49	178	3.38	14.05	603	.....
" 28....	"	89	1,364	0.43	14.05	592(a)	.....
Aug. 27....	"	47	172	3.17	13.92	546	.....
Sept. 11....	"	49	170	2.57	13.84	437	.....
Oct. 13....	"	48	182	3.04	14.17	554	.....

(a) Measurement made at Black's Bridge, 1 mile above.

Daily Gauge Height and Discharge of Muskoka River (South Branch) at Tretheway's Falls for 1914-5

Drainage Area, 668 Square Miles

Day	November			December			January			February			March			April			May			June			July			August			September			October		
	Gauge Ht.		Dis-charge	Gauge Ht.		Dis-charge	Gauge Ht.		Dis-charge	Gauge Ht.		Dis-charge	Gauge Ht.		Dis-charge	Gauge Ht.		Dis-charge	Gauge Ht.		Dis-charge	Gauge Ht.		Dis-charge	Gauge Ht.		Dis-charge	Gauge Ht.		Dis-charge	Gauge Ht.		Dis-charge	Gauge Ht.		Dis-charge
	Feet	Sec.-ft.		Feet	Sec.-ft.		Feet	Sec.-ft.		Feet	Sec.-ft.		Feet	Sec.-ft.		Feet	Sec.-ft.		Feet	Sec.-ft.		Feet	Sec.-ft.		Feet	Sec.-ft.		Feet	Sec.-ft.		Feet	Sec.-ft.		Feet	Sec.-ft.	
1	12.92	350		13.75	650		14.25	665		14.17	640		14.17	640		14.42	730		16.42	1820		15.00	995		14.42	730		14.00	580		13.84	525		13.92	550	
2	12.83	325		14.00	750		14.25	665		14.33	695		14.08	610		14.42	730		16.42	1820		15.50	1265		14.33	695		14.00	580		13.75	500		13.84	525	
3	12.83	325		14.25	870		14.25	665		14.58	790		14.00	580		14.50	760		16.42	1820		16.00	1560		14.33	695		14.00	580		13.75	500		13.92	550	
4	12.75	300		14.00	750		14.25	665		14.83	905		14.00	580		14.50	760		16.33	1765		15.50	1265		14.33	695		14.00	580		13.75	500		14.00	580	
5	12.67	280		13.75	650		14.33	695		14.58	790		14.00	580		14.50	760		16.50	1875		15.33	1170		14.50	760		14.09	615		13.75	500		14.09	615	
6	12.67	280		13.67	610		14.50	760		14.17	640		14.08	610		14.58	790		16.50	1875		15.42	1220		14.50	760		14.09	615		13.75	500		14.17	640	
7	12.75	300		13.67	610		14.50	760		14.17	640		14.00	580		14.50	760		16.42	1820		15.50	1265		14.50	760		14.09	615		13.75	500		14.17	640	
8	12.67	280		13.58	580		14.50	760		14.00	580		14.00	580		14.50	760		16.42	1820		16.50	1875		14.50	760		14.09	615		13.75	500		14.25	665	
9	12.67	280		13.50	550		14.42	730		14.17	640		13.92	550		15.67	1360		16.17	1660		16.17	1660		16.50	1875		14.08	610		13.84	525		14.34	700	
10	12.75	300		13.42	510		14.42	730		14.17	640		13.92	550		16.17	1660		16.25	1710		16.00	1560		16.25	1710		14.08	610		13.75	500		14.25	665	
11	12.83	325		13.42	510		14.42	730		14.08	610		14.00	580		16.25	1710		15.25	1125		16.00	1560		16.25	1710		14.08	610		13.84	525		14.34	700	
12	13.00	360		13.50	550		14.33	695		14.08	610		14.00	580		16.25	1710		15.25	1125		16.00	1560		16.25	1710		14.08	610		13.75	500		14.25	665	
13	13.00	360		13.50	550		14.25	665		14.00	580		13.92	550		16.75	2035		16.25	1710		16.00	1560		16.25	1710		14.17	640		13.75	500		14.17	640	
14	13.00	360		13.50	550		14.17	640		14.00	580		13.92	550		16.75	2035		16.25	1710		16.00	1560		16.25	1710		14.17	640		13.75	500		14.17	640	
15	13.17	420		13.42	510		14.17	640		14.00	580		13.83	525		17.00	2210		15.00	995		16.17	1660		16.25	1710		14.17	640		13.84	525		14.25	665	
16	13.58	380		13.42	510		14.25	665		13.92	550		13.83	525		18.63	3720		15.25	1125		16.25	1710		16.25	1710		14.25	665		14.08	610		14.25	665	
17	13.42	510		13.50	550		14.25	665		13.83	525		14.17	640		17.00	2210		15.00	995		16.17	1660		16.17	1660		14.17	640		13.75	500		14.25	665	
18	13.33	475		13.50	550		14.33	695		13.75	500		14.08	610		17.00	2210		15.25	1125		15.50	1265		16.17	1660		14.17	640		13.75	500		14.25	665	
19	13.25	450		13.58	580		14.33	695		13.83	525		14.08	610		17.00	2210		15.00	995		15.00	995		15.83	1460		14.25	665		13.75	500		14.25	665	
20	13.25	450		13.58	580		14.25	665		13.92	550		14.08	610		16.92	2155		15.00	995		14.75	865		15.83	1460		14.25	665		13.75	500		14.25	665	
21	13.17	420		13.58	580		14.25	665		13.92	550		14.00	580		16.92	2155		14.75	865		14.75	865		14.75	865		14.25	665		13.84	525		14.25	665	
22	13.17	420		13.67	610		14.25	665		13.92	550		14.00	580		16.92	2155		14.75	865		14.75	865		14.75	865		14.25	665		13.84	525		14.25	665	
23	13.17	420		13.67	610		14.25	665		13.83	525		14.00	580		16.83	2100		14.75	865		14.75	865		14.75	865		14.25	665		13.84	525		14.25	665	
24	13.33	475		13.75	650		14.25	665		14.00	580		14.08	610		16.83	2100		14.75	865		14.75	865		14.75	865		14.25	665		13.84	525		14.25	665	
25	13.58	580		13.83	680		14.25	665		14.00	580		14.08	610		16.83	2100		14.75	865		14.75	865		14.75	865		14.25	665		13.84	525		14.25	665	
26	13.58	580		13.83	680		14.25	665		14.00	580		14.08	610		16.83	2100		14.75	865		14.75	865		14.75	865		14.25	665		13.84	525		14.25	665	
27	13.67	610		13.67	610		14.17	640		14.08	610		14.00	580		16.75	2035		14.83	905		14.83	905		14.50	760		14.08	610		13.92	550		14.00	580	
28	13.83	680		13.75	650		14.17	640		14.08	610		14.00	580		16.75	2035		14.83	905		14.83	905		14.50	760		14.08	610		13.92	550		14.00	580	
29	14.00	750		13.83	680		14.17	640		14.08	610		14.00	580		16.67	1985		14.83	905		14.83	905		14.50	760		14.08	610		13.92	550		14.00	580	
30	13.83	680		14.00	750		14.17	640		14.08	610		14.00	580		16.58	1920		14.83	905		14.83	905		14.50	760		14.08	610		13.92	550		14.00	580	
31	.....	.....		14.00	750		14.17	640		14.08	610		14.00	580		16.50	1875		15.00	1500		15.00	1500		14.50	760		14.17	640		13.84	525		14.00	580	

Monthly Discharge of Muskoka River at Tretheway's Falls for 1914-5

Drainage Area, 668 Square Miles

Month	Discharge in Second-feet			Discharge in Second-feet per Square Mile			Run-off
	Maximum	Minimum	Mean	Maximum	Minimum	Mean	Depth in Inches on Drainage Area
November (1914).	750	280	431	1.12	.42	.65	.73
December ..	870	510	620	1.30	.76	.93	1.07
January (1915).	760	640	679	1.14	.96	1.02	1.18
February	905	500	611	1.35	.75	.91	.96
March.....	695	525	594	1.04	.79	.89	1.03
April.....	3,720	730	1,758	5.57	1.09	2.63	2.93
May.....	1,875	865	1,262	2.81	1.29	1.89	2.18
June.....	1,875	760	1,227	2.81	1.14	1.84	2.05
July.....	760	580	671	1.14	.87	1.00	1.15
August	640	525	588	.96	.79	.88	1.01
September	550	500	513	.82	.75	.77	.86
October.....	700	525	621	1.05	.79	.93	1.07
The year	3,720	280	798	5.57	.42	1.19	16.22

Seguin River near Parry Sound

Location—700 feet below Mountain Dam, two miles above the highway bridge, and about 7 miles above the Town of Parry Sound, Township of McDougal, Parry Sound District.

Records Available—Monthly discharge measurements from June, 1912, to October, 1915. Daily gauge heights from August 1 to October 31, 1915.

Drainage Area—380 square miles.

Gauge—Vertical steel staff with enamelled face, graduated in feet and inches, firmly wedged in rock on left shore 200 feet below dam. Zero of gauge (elev. 8.00 feet) is referred to a bench mark (elev. 15.00 feet) painted on a large rock directly across stream from gauge.

Channel—Both banks are high, wooded and not liable to overflow. The bed of the stream is composed of rocks and boulders, slightly shifting. The current is swift, and flows through one channel at all stages.

Discharge Measurements—Made by wading with a Price current meter. During high water, measurements are made at the highway bridge at the head of Mill Lake, 2 miles below wading section.

Regulation—The dam 700 feet above gauging station causes fluctuation of river at gauge.

Winter Flow—Ice forms along the banks of river at the station during the winter months. The river is entirely covered with ice for a considerable distance above and below station.

Accuracy—Discharges for gauge heights below 10.6 feet are considered fair. Rating curve above this point not very well defined.

Observer—Francis Haywood, Parry Sound.

Discharge Measurements of Seguin River near Parry Sound in 1915

Date	Hydrographer	Width in Feet	Area of Section in Sq. Feet	Mean Velocity in Feet per Sec.	Gauge Height in Feet	Discharge in Sec-Feet	Discharge in Second-feet per Square Mile
Jan. 14....	Murray, W. S....	105	142	2.08	10.80	296 (a)	.....
Feb. 19....	"	63	510	0.71	10.90	362 (b)	.....
April 15....	"	63	605	5.02	.....	3033 (b)	.....
May 17....	"	77	93	2.24	10.73	209	.....
June 17....	"	96	158	2.22	11.15	350	.....
July 26....	"	78	82	2.10	10.43	173	.....
Aug. 26....	"	95	110	1.62	10.55	178	.....
Sept. 9....	"	79	70	1.95	10.33	137	.....

(a) Ice on both banks at section; river covered with ice 200 feet below.

(b) Measurement made at highway bridge at head of Mill Lake, 2 miles below wading section.

Monthly Discharge of Seguin River near Parry Sound for 1914-5

Drainage Area, 380 Square Miles

Month.	Discharge in Second-feet			Discharge in Second-feet per Square Mile			Run-off
	Maximum	Minimum	Mean	Maximum	Minimum	Mean	Depth in Inches on Drainage Area
November (1914)	.....	.....	.....	.....	.....	.....	.....
December ..	.....	.....	.....	.....	.....	.....	.....
January (1915)	.....	.....	.....	.....	.....	.....	.....
February .....	.....	.....	.....	.....	.....	.....	.....
March.....	.....	.....	.....	.....	.....	.....	.....
April .....	.....	.....	.....	.....	.....	.....	.....
May .....	.....	.....	.....	.....	.....	.....	.....
June .....	.....	.....	.....	.....	.....	.....	.....
July .....	.....	.....	.....	.....	.....	.....	.....
August	427	134	201	1.12	.35	.53	.61
September.....	420	124	181	1.11	.33	.48	.54
October	618	169	415	1.63	.45	1.09	1.26
The period.....	618	124	267	1.63	.33	.70	2.41

South River near Powassan

Location—At highway bridge known as Healey's Bridge, about 2½ miles north-west of the Town of Powassan, on lot 21, concession 13, Township of Himsworth, District of Parry Sound.

Records Available—Monthly discharge measurements from March, 1912, to October, 1915. Daily gauge heights from March 11, 1914, to October 31, 1915.

Drainage Area—305 square miles.

Gauge—Vertical steel staff with enamelled face, graduated in feet and inches, which was removed from old bridge and located on the north-west corner of the left abutment of the new Gough's highway bridge, about one mile below gauging station. Zero of gauge (elev. 23.00) is referred to bench mark (elev. 56.15) painted on a rock in the top corner of barn foundation known as Gough's barn, about 350 feet from gauge.

Channel—Straight for about 200 feet above and 1,500 feet below the gauging station. Both banks are high and not liable to overflow. The bed of the stream consists of clay and boulders, slightly shifting. The current is moderate.

Discharge Measurements—Made from Healey's highway bridge during high water, and, during low water periods, by wading 100 feet above bridge.

Control—About 5 miles below gauging station there is a dam used by the Nipissing Power Company which may cause back water at the gauge.

Winter Flow—During the winter months measurements are made through ice to determine the winter flow. The relation of gauge height to discharge is seriously affected by ice.

Accuracy—The rating curve is fairly well defined. Discharges for open water period are considered good.

Observer—Owen Gough, Powassan.

Remarks—The old Gough's Bridge was replaced in April, 1915, by a new bridge 150 feet upstream.

Discharge Measurements of South River near Powassan in 1915

Date	Hydrographer	Width in Feet	Area of Section in Sq. Feet	Mean Velocity in Feet per Sec.	Gauge Height in Feet	Discharge in Sec-Feet	Discharge in Second-feet per Square Mile
Feb. 12....	Murray, W. S....	50	96	1.26	24.16	122(a)	.....
Mar. 12....	"	58	110	1.38	24.20	152(a)	.....
April 22....	"	72	692	1.28	27.83	883(b)	.....
May 15....	"	112	397	0.94	25.58	375	.....
June 24....	"	110	353	0.72	25.12	257	.....
July 21....	"	49	76	1.33	24.02	101(c)	.....
Aug. 23....	"	73	143	1.64	24.87	235(c)	.....
Sept. 15....	"	56	74	0.80	23.54	59(c)	.....
" 15....	"	56	74	0.84	23.54	62(c)	.....
" 15....	"	56	74	0.80	23.54	59(c)	.....
" 15....	"	56	74	0.80	23.54	59(c)	.....
Oct. 21....	"	111	431	0.91	25.83	396	.....

(a) Measurement made on ice at wading section.

(b) Measurement made on downstream side of Gough's Bridge.

(c) Wading section.

Daily Gauge Height and Discharge of South River near Powassan for 1914-5

Drainage Area, 305 Square Miles

Day	November			December			January			February			March			April			May			June			July			August			September			October		
	Gauge Ht.		Dis-charge	Gauge Ht.		Dis-charge	Gauge Ht.		Dis-charge	Gauge Ht.		Dis-charge	Gauge Ht.		Dis-charge	Gauge Ht.		Dis-charge	Gauge Ht.		Dis-charge	Gauge Ht.		Dis-charge	Gauge Ht.		Dis-charge	Gauge Ht.		Dis-charge	Gauge Ht.		Dis-charge			
	Feet	Sec-ft.		Feet	Sec-ft.		Feet	Sec-ft.		Feet	Sec-ft.		Feet	Sec-ft.		Feet	Sec-ft.		Feet	Sec-ft.		Feet	Sec-ft.		Feet	Sec-ft.		Feet	Sec-ft.		Feet	Sec-ft.				
1	24.25	149	25.67	389	24.25	111	24.25	117	24.42	159	24.42	173	26.67	612	24.66	210	24.50	185	23.75	87	24.81	234	24.66	210												
2	24.29	155	26.71	399	24.17	101	24.25	117	24.42	159	24.42	173	26.00	457	24.67	211	24.54	191	23.67	77	24.74	222	24.55	192												
3	24.29	155	26.88	432	24.17	101	24.25	117	24.42	159	24.42	173	26.00	457	24.63	205	24.63	205	23.67	77	24.49	183	24.29	155												
4	24.37	166	26.58	371	24.25	111	24.25	123	24.33	147	24.58	197	25.96	449	24.63	205	24.75	224	23.91	106	24.24	148	24.33	160												
5	24.88	245	26.17	293	24.17	101	24.33	127	24.42	159	24.67	211	25.92	440	24.50	185	24.92	251	25.04	271	24.12	133	24.79	230												
6	25.00	264	25.67	389	24.08	109	24.42	146	24.25	136	25.00	264	25.83	421	24.42	173	25.08	278	25.12	284	24.00	117	25.41	337												
7	24.88	245	25.50	355	24.25	130	24.33	134	24.33	147	25.54	363	25.88	432	24.33	160	25.50	355	25.33	322	23.96	112	25.29	314												
8	24.79	230	25.25	307	24.42	152	24.33	134	24.25	136	26.63	381	26.25	513	24.62	203	25.33	322	25.42	339	23.83	97	25.16	291												
9	24.58	197	25.04	271	24.33	140	24.33	140	24.25	123	24.25	136	26.54	582	25.33	322	25.42	339	25.62	379	23.75	87	25.54	363												
10	24.42	173	25.00	264	24.33	140	24.25	123	24.25	136	28.25	1063	26.25	543	25.21	300	25.25	307	26.08	475	23.79	92	26.08	475												
11	24.38	167	24.83	237	24.25	130	24.17	113	24.25	136	31.42	2510	26.08	475	25.17	293	24.63	205	25.49	413	23.91	106	26.00	457												
12	24.71	218	24.79	183	24.25	130	24.25	123	24.25	149	30.80	2480	26.00	457	25.17	293	24.38	167	25.75	345	23.79	92	25.87	430												
13	24.79	230	24.75	178	24.42	152	24.25	123	24.25	149	29.87	1822	25.88	432	25.17	293	24.38	167	25.45	345	23.79	92	25.87	430												
14	24.90	248	24.67	166	24.50	163	24.25	123	24.42	173	30.05	1930	25.88	432	25.08	278	24.17	139	26.04	466	23.50	58	25.87	430												
15	24.75	224	24.54	148	24.50	163	24.54	162	24.46	179	30.04	1924	25.58	371	25.25	307	24.17	139	25.63	387	23.50	58	26.04	466												
16	26.83	653	24.50	143	24.50	163	24.67	175	24.42	173	29.63	1681	25.46	347	25.67	389	24.08	127	25.33	322	23.50	58	26.00	457												
17	26.54	582	24.50	143	24.42	152	24.58	167	24.58	197	29.00	1350	25.50	355	25.67	389	24.08	127	25.20	298	23.62	71	25.87	430												
18	26.00	457	24.46	138	24.42	152	24.42	146	24.42	173	28.59	1186	25.50	355	25.67	389	24.08	127	25.20	298	23.62	71	25.87	430												
19	25.75	405	24.42	138	24.42	139	24.42	146	24.25	149	28.42	1122	25.63	381	25.42	339	24.00	117	25.46	347	24.04	122	25.66	387												
20	25.42	339	24.42	138	24.42	139	24.42	139	24.33	134	28.00	982	25.41	337	25.42	339	24.00	117	25.33	322	24.00	117	25.70	395												
21	25.25	307	24.42	138	24.25	117	24.33	134	24.17	139	28.00	982	25.41	337	25.42	339	24.00	117	25.33	322	24.00	117	25.70	395												
22	25.00	264	24.42	138	24.33	127	24.33	134	24.16	138	27.84	932	25.37	329	25.29	314	24.00	117	25.04	271	24.25	149	25.66	387												
23	25.00	264	24.42	138	24.33	127	24.33	134	24.50	185	27.62	866	25.37	329	25.21	300	23.96	112	24.95	256	24.20	143	25.66	387												
24	24.92	251	24.42	138	24.33	127	24.33	134	24.75	224	27.75	905	25.37	329	25.12	284	23.92	107	24.75	224	24.25	149	25.66	387												
25	24.92	251	24.33	121	24.33	127	25.08	245	24.92	251	28.25	1063	25.37	329	25.08	278	23.92	107	24.29	155	24.20	143	25.33	322												
26	25.08	277	24.33	121	24.33	127	24.83	205	24.96	254	28.08	1008	25.21	300	25.00	264	23.92	107	24.41	172	24.54	191	25.25	307												
27	25.25	307	24.33	121	24.33	137	24.33	137	24.67	181	27.67	884	25.08	278	24.96	258	23.92	107	23.75	87	26.16	492	25.25	307												
28	25.25	307	24.33	121	24.25	117	24.25	117	24.58	167	27.58	854	25.04	271	24.96	258	23.92	107	23.75	87	25.99	455	25.08	278												
29	25.00	264	24.33	121	24.25	117	24.25	117	24.58	185	27.50	831	24.96	258	24.67	211	23.92	107	23.66	76	25.49	353	25.00	264												
30	25.00	264	24.33	121	24.25	117	24.25	117	24.58	185	27.33	784	24.83	237	24.62	203	22.92	107	23.87	101	25.16	291	25.00	264												
31	.....	.....	24.33	121	24.25	117	24.25	117	24.50	185	.....	.....	24.83	210	.....	.....	23.83	97	24.25	149	.....	.....	25.00	264									

Monthly Discharge of South River near Powassan for 1914-5

Drainage Area, 305 Square Miles

Month	Discharge in Second-feet			Discharge in Second-feet per Square Mile			Run-off
	Maximum	Minimum	Mean	Maximum	Minimum	Mean	Depth in Inches on Drainage Area
November .(1914)	653	149	275	2.14	.49	.90	1.00
December “	432	121	209	1.42	.40	.68	.78
January ..(1915)	163	101	130	.53	.33	.43	.50
February	245	113	144	.80	.37	.47	.49
March	254	136	170	.83	.45	.56	.65
April.....	2,510	173	1,022	8.23	.57	3.35	3.74
May	612	210	389	2.01	.69	1.28	1.48
June.....	389	160	272	1.28	.52	.89	.99
July.....	355	97	170	1.16	.32	.56	.65
August	479	77	256	1.57	.25	.84	.97
September	492	58	160	1.61	.19	.52	.58
October.....	475	155	342	1.56	.51	1.12	1.29
The year.....	2,510	58	295	8.23	.19	.97	13.12

Spanish River at Espanola

Location—At highway bridge, about 200 yards below Espanola Falls and about the same distance below the Spanish River Pulp and Paper Mills, in the Town of Espanola, Township of Merritt, Sudbury District.

Records Available—Monthly discharge measurements from March, 1914, to October, 1915. Daily gauge heights from May 6 to October 31, 1915.

Drainage Area—4,490 square miles.

Gauge—Vertical steel staff with enamelled face, graduated in feet and inches, fastened to pile near left abutment on upstream side of bridge. Zero of gauge (elev. 19.00 feet) is referred to bench mark (elev. 25.38 feet) located on top of nose of left abutment.

Channel—Above the station the water from the Falls and Power House flows into a pool about 700 feet wide and then narrows down to 225 feet at the bridge, thence flowing straight for about 1,000 feet. Both banks are high, rocky, wooded, and will not overflow. The bed of the stream is composed of clay and boulders, practically permanent. The current is fast, one channel existing at low stages. At high stages the stream flows through two channels, separated by the centre pier of the bridge.

Discharge Measurements—Made from highway bridge with a Price current meter.

Regulation—The paper plant uses all the water coming down the river at low stages during the summer, discharging through the tail race and past the section. The river is used throughout the spring and summer for log driving.

Winter Flow—Ice forms about one mile below the station, but remains open at the gauging section during the entire year.

Accuracy—Conditions at station are not very favorable for making accurate discharge measurements. The discharge relation is affected by logs during the log driving period. As there are not sufficient records available to compute discharges for that period, the open water rating curve was assumed applicable.

Observer—Matthew Doyle, Espanola.

Discharge Measurements of Spanish River at Espanola in 1915

Date	Hydrographer	Width in Feet	Area of Section in Sq. Feet	Mean Velocity in Feet per Sec.	Gauge Height in Feet	Discharge in Sec-Feet	Discharge in Second-feet per Square Mile
Jan. 13....	Murray, W. S. .	216	2,487	0.95	21.67	2,382 (a)	.....
Feb. 18....	" ..	203	2,482	1.02	21.68	2,535 (a)	.....
Mar. 17....	" ..	215	2,557	1.09	22.08	2,783 (b)	.....
June 8....	" ..	220	2,731	1.54	22.88	4,230 (b)	.....
July 12....	" ..	219	2,713	1.66	22.80	4,526 (b)	.....
Aug. 16....	" ..	211	2,427	0.46	20.50	1,125 (c)	.....
Sept. 27....	" ..	218	2,917	1.42	22.79	4,155	.....
" 29....	" ..	222	3,215	2.06	24.11	6,624	.....
Oct. 1....	" ..	233	3,429	1.68	23.91	5,791 (d)	.....

(a) Ice on river half mile below section.

(b) Logs on control.

(c) Dam above closed.

(d) Measurement taken at Webbwood, 8 miles below.

Monthly Discharge of Spanish River at Espanola for 1914-5

Drainage Area 4,490 Square Miles

Month	Discharge in Second-feet			Discharge in Second-feet per Square Mile			Run-off
	Maximum	Minimum	Mean	Maximum	Minimum	Mean	Depth in Inches on Drainage Area
November (1914)	.....	.....	.....	.....	.....	.....	.....
December	.....	.....	.....	.....	.....	.....	.....
January... (1915)	.....	.....	.....	.....	.....	.....	.....
February	.....	.....	.....	.....	.....	.....	.....
March	.....	.....	.....	.....	.....	.....	.....
April	.....	.....	.....	.....	.....	.....	.....
May 5-31.....	7,520	6,650	7,017	1.67	1.48	1.56	1.57
June	9,020	4,080	6,332	2.01	.91	1.41	1.57
July	5,000	1,330	3,146	1.11	.30	.70	.81
August	3,830	745	2,153	.85	.17	.48	.55
September	6,020	650	2,429	1.34	.14	.54	.60
October	7,955	3,455	6,588	1.79	.77	1.47	1.69
The period.....	9,020	650	4,560	2.01	.14	1.02	6.79

Sturgeon River at Smoky Falls

Location—At the highway bridge at Smoky Falls Post Office, and 2 miles above the Smoky Falls, Township of Springer, Nipissing District.

Records Available—Monthly discharge measurements, August, 1912, to October, 1915. Daily gauge heights, January 12 to 31, 1914, and March 15, 1914, to October 31, 1915.

Drainage Area—2,250 square miles.

Gauge—Vertical steel staff with enamelled face, graduated in feet and inches, and attached to a wooden pile on the right, upstream side of the bridge. The zero on the gauge (elevation 32.00) is referred to a bench mark (elevation 53.47) painted on a rock on the right bank of the river, about 175 feet above the bridge.

Channel—Straight for about 700 feet above and about 1 mile below the station. The banks are fairly high, clean, sandy and not liable to overflow. The bed of the stream is composed of clay and sand, slightly shifting. The current is fast and smooth, flowing through six channels, formed by bridge piers and abutments.

Discharge Measurements—Made from highway bridge with a Price current meter.

Regulation—Dams above are used for power and log driving purposes.

Winter Flow—During the winter months the river is covered with ice, and measurements are made through the ice to determine the winter discharge. The relation of gauge height to discharge is seriously affected by ice.

Accuracy—The open water rating curve is fairly well defined. The relation of gauge height to discharge is affected during the log-driving season, the discharges as shown in the table for that period being somewhat in excess of the true value.

Observer—A. Pineault, Smoky Falls.

Discharge Measurements of Sturgeon River at Smoky Falls in 1915

Date	Hydrographer	Width in Feet	Area of Section in Sq. Feet	Mean Velocity in Feet per Sec.	Gauge Height in Feet	Discharge in Sec-Feet	Discharge in Second-feet per Square Mile
Feb. 16....	Murray, W. S ..	162	1,343	0.48	33.50	648(a)	.....
Mar. 16....	“ ..	177	1,395	0.38	33.08	536(a)	.....
April 28....	“ ..	210	2,329	1.06	36.00	3,777(b)	.....
June 28....	“ ..	210	1,883	1.16	34.42	2,175(b)	.....
July 20....	“ ..	210	1,980	0.94	34.14	1,868	.....
Aug. 30....	“ ..	210	1,875	0.75	33.68	1,410(b)	.....
Sept. 17....	“ ..	210	1,939	1.01	33.91	1,592	.....
“ 18....	“ ..	210	1,939	0.97	33.90	1,881	.....
“ 18....	“ ..	210	1,939	1.01	33.90	1,958	.....
Oct. 8....	“ ..	210	2,149	1.43	34.90	3,081	.....

(a) Ice on control
(b) Logs on control

Daily Gauge Height and Discharge of Sturgeon River at Smoky Falls for 1914-5

Drainage Area 2,250 Square Miles

Day	November			December			January			February			March			April			May			June			July			August			September			October		
	Gauge Ht.		Dis-charge	Gauge Ht.		Dis-charge	Gauge Ht.		Dis-charge	Gauge Ht.		Dis-charge	Gauge Ht.		Dis-charge	Gauge Ht.		Dis-charge	Gauge Ht.		Dis-charge	Gauge Ht.		Dis-charge	Gauge Ht.		Dis-charge	Gauge Ht.		Dis-charge	Gauge Ht.		Dis-charge			
	Feet	Sec.-ft.		Feet	Sec.-ft.		Feet	Sec.-ft.		Feet	Sec.-ft.		Feet	Sec.-ft.		Feet	Sec.-ft.		Feet	Sec.-ft.		Feet	Sec.-ft.		Feet	Sec.-ft.		Feet	Sec.-ft.		Feet	Sec.-ft.				
1	34.00	2380	34.00	2380	33.67	670	33.42	600	33.25	640	32.92	695	36.42	5764	35.75	4650	34.38	2572	34.04	2138	33.78	1848	35.29	3914												
2	34.00	2380	34.33	2810	33.67	675	33.33	610	33.25	640	32.83	680	36.42	5764	35.62	4442	34.54	2796	34.16	2282	33.91	1991	35.20	3770												
3	34.17	2600	34.58	3140	33.67	680	33.17	620	33.25	640	32.83	665	36.17	5339	35.25	3850	34.54	2796	33.91	1991	33.91	1991	35.04	3530												
4	34.33	2810	34.58	3140	33.67	680	33.33	640	33.17	640	33.83	680	36.00	5050	35.67	4522	34.37	2558	33.67	1730	33.87	1947	34.91	3335												
5	34.50	3025	34.45	2970	33.67	690	33.33	650	33.25	630	33.08	740	35.92	4922	35.67	4522	34.37	2558	33.67	1730	33.75	1815	34.91	3335												
6	34.67	3250	34.33	2810	33.67	710	33.33	670	33.25	630	33.25	945	36.00	5050	35.42	4122	34.42	2628	33.75	1815	33.62	1680	34.91	3335												
7	34.75	3350	34.25	2710	33.75	740	33.42	680	33.25	630	33.92	1350	36.00	5050	35.12	3656	34.50	2740	33.33	2502	33.58	1640	34.91	3335												
8	34.83	3460	34.17	2600	33.83	780	33.33	690	33.17	620	34.58	2852	36.67	6189	35.08	3590	34.71	3035	34.29	2447	33.24	1342	34.87	3275												
9	34.83	3460	34.08	2500	33.83	820	33.33	690	33.17	610	34.92	3350	36.67	6189	34.96	3410	34.33	2502	34.37	2558	33.03	1174	34.67	2978												
10	34.75	3350	34.00	2380	33.83	820	33.33	690	33.17	610	35.00	3470	36.83	6464	34.92	3350	34.45	2670	33.95	2035	32.83	1038	34.58	2852												
11	34.67	3250	33.92	2270	33.83	820	33.33	680	33.17	600	35.42	4122	36.75	6325	35.04	3530	34.29	2447	33.75	1815	32.83	1038	34.50	2740												
12	34.58	3140	33.83	2000	33.75	810	33.42	680	33.17	570	35.50	4250	36.58	6036	34.96	3410	34.21	2343	34.04	2138	32.87	1062	34.62	2908												
13	34.33	2810	33.75	1800	33.75	800	33.33	670	33.17	550	35.25	3850	36.56	6036	35.04	3530	34.29	2447	33.83	1903	33.03	1174	34.83	3215												
14	34.42	2925	33.75	1640	33.75	800	33.42	630	33.17	550	35.08	3590	36.17	5339	35.21	3786	34.25	2395	33.75	1815	33.83	1903	34.70	3020												
15	34.42	2925	33.75	1640	33.75	800	33.42	630	33.17	550	35.08	3590	36.17	5339	35.21	3786	34.25	2395	33.75	1815	33.83	1903	34.70	3020												
16	34.83	3460	33.67	1420	33.75	760	33.42	640	33.08	540	34.92	3350	35.33	3978	35.33	3978	34.25	2395	33.91	1991	33.91	1991	34.62	2908												
17	34.67	3250	33.58	1240	33.75	740	33.33	640	33.08	540	34.92	3350	35.33	3978	35.33	3978	34.25	2395	33.91	1991	33.91	1991	34.62	2908												
18	34.00	2380	33.50	1100	33.75	740	33.33	640	33.00	560	35.17	3725	35.25	3850	35.50	4250	34.12	2294	33.62	1680	33.29	1382	34.50	2740												
19	34.00	2380	34.00	860	33.75	680	33.33	640	33.00	560	35.17	3725	35.17	3725	35.38	4058	34.12	2294	33.62	1680	33.29	1382	34.50	2740												
20	34.00	2380	34.00	780	33.75	670	33.33	640	32.92	580	35.58	4378	35.17	3725	35.42	4122	33.91	1991	33.62	1680	34.08	2186	34.50	2740												
21	34.00	2380	34.00	700	33.75	630	33.33	640	32.92	580	35.92	4922	35.83	4778	35.21	3786	33.75	1859	33.25	1350	34.50	2740	34.45	2670												
22	34.88	3530	34.00	740	33.67	610	33.33	640	33.08	620	33.92	4922	36.17	5339	35.21	3786	33.75	1859	33.25	1350	34.50	2740	34.45	2670												
23	34.00	2380	33.92	700	33.67	600	33.33	640	33.25	695	35.50	3250	35.92	4922	35.12	3650	33.83	1903	33.29	1382	34.50	2740	34.45	2670												
24	34.00	2380	33.83	680	33.67	600	33.33	640	33.17	650	35.83	4778	36.17	5339	35.29	3914	33.83	1903	33.50	1560	34.25	2670	34.37	2558												
25	33.92	2270	33.75	650	33.58	590	33.33	640	33.25	725	35.58	4378	36.17	5339	34.96	3410	33.87	1947	33.12	1246	35.54	4314	34.16	2282												
26	33.92	2270	33.67	640	33.58	590	33.33	640	33.25	725	36.17	5339	36.08	5186	34.74	3080	33.74	1804	33.12	1246	35.54	4314	34.16	2282												
27	34.00	2380	33.75	650	33.58	590	33.33	640	33.25	725	36.17	5339	36.08	5186	34.74	3080	33.83	1903	32.91	1087	35.66	4506	34.08	2186												
28	33.92	2270	33.67	650	33.58	590	33.33	640	33.25	725	36.17	5339	36.08	5186	34.74	3080	34.04	2138	32.95	1115	35.54	4314	34.04	2138												
29	33.92	2270	33.75	650	33.50	590	33.33	640	33.25	725	36.17	5339	36.08	5186	34.74	3080	34.17	2294	33.62	1680	35.45	4170	34.00	2090												
30	33.83	2180	33.75	650	33.50	590	33.33	640	33.25	725	36.17	5339	36.08	5186	34.74	3080	34.17	2294	33.62	1680	35.45	4170	34.00	2090												
31			

NOTE.—Relation of gauge heights to discharge affected by ice from Dec. 12th, 1914, to April 6th, 1915; discharge for the period estimated from discharge measurements, observer's notes and climatologic records.

Monthly Discharge of Sturgeon River at Smoky Falls for 1914-5

Drainage Area 2,250 Square Miles

Month	Discharge in Second-feet.			Discharge in Second-feet per Square Mile			Run-off
	Maximum	Minimum	Mean	Maximum	Minimum	Mean	Depth in Inches on Drainage Area.
November (1914)	3,530	2,180	2,787	1.57	.97	1.24	1.38
December “	3,140	650	1,624	1.40	.29	.72	.83
January .. (1915)	820	590	698	.36	.26	.31	.36
February	690	600	650	.31	.27	.29	.30
March.....	725	540	620	.32	.24	.28	.32
April.....	5,611	665	3,332	2.49	.30	1.48	1.65
May.....	6,464	3,725	5,114	2.87	1.66	2.27	2.62
June	4,650	2,684	3,742	2.07	1.19	1.66	1.85
July.....	2,796	1,804	2,334	1.24	.80	1.04	1.20
August	2,558	1,087	1,810	1.14	.48	.80	.92
September.....	4,506	1,038	2,146	2.00	.46	.95	1.06
October.....	3,914	2,090	2,866	1.74	.93	1.23	1.42
The year	6,464	540	2,316	2.87	.24	1.05	13.90

Vermilion River near White Fish

Location—At the old highway bridge 50 feet above the rapids, 300 feet north of C.P.R. bridge, and two miles east of the Town of White Fish, Township of Graham, Sudbury District.

Records Available—Monthly discharge measurements from August, 1913, to October, 1915. Daily gauge heights from June 11 to October 31, 1915.

Drainage Area—1,580 square miles.

Gauge—Vertical steel staff with enamelled face, graduated in feet and inches, attached to crib on right shore 50 feet below gauging station. Zero of gauge (elev. 25.58 feet) is referred to bench mark (elev. 38.39 feet) painted on rock on right bank 15 feet above gauging station.

Channel and Control—Straight for about 300 feet above and 700 feet below the station. Both banks are high, rocky and wooded, and not liable to overflow. Bed of stream is rocky and permanent, current is swift, two channels existing at all stages on account of the centre pier of the bridge. Log jams sometimes occur on the rapids during low flows, causing back water at the station.

Discharge Measurements—Made from old highway bridge with a Price current meter.

Winter Flow—On account of the fast current the channel at gauging station remains open during the winter months, ice forming at banks.

Accuracy—Rating curve fairly well defined between gauge heights 27.00 feet and 29.00 feet. As there are not sufficient data available for computing the discharge during the log driving period the open water curve was assumed applicable.

Observer—A. Boucher, White Fish.

Discharge Measurements of Vermilion River near White Fish in 1915

Date	Hydrographer	Width in Feet	Area of Section in Sq. Feet	Mean Velocity in Feet per Sec.	Gauge Height in Feet	Discharge in Sec-Feet	Discharge in Second-feet per Square Mile
May 12....	Murray, W. S..	187	1,020	2.29	29.30	2,343(a)	.....
June 11....	" ..	200	1,005	2.24	29.05	2,249(a)	.....
Aug. 31....	" ..	165	698	1.03	27.34	721	.....
Oct. 2....	" ..	191	916	2.22	28.70	2,034	.....

(a) Logs on control.

Drainage Area 1,580 Square Miles

[illegible]

Monthly Discharge of Vermilion River near Whitefish for 1914-5

Drainage Area, 1,580 Square Miles

Month	Discharge in Second-feet			Discharge in Second-feet per Square Mile			Run-off
	Maximum	Minimum	Mean	Maximum	Minimum.	Mean.	Depth in Inches on Drainage Area
November (1914) .....	.....	.....	.....	.....	.....	.....	.....
December .....	.....	.....	.....	.....	.....	.....	.....
January (1915) .....	.....	.....	.....	.....	.....	.....	.....
February .....	.....	.....	.....	.....	.....	.....	.....
March .....	.....	.....	.....	.....	.....	.....	.....
April .....	.....	.....	.....	.....	.....	.....	.....
May .....	.....	.....	.....	.....	.....	.....	.....
June 11-30	3,050	2,050	2,651	1.93	1.30	1.68	1.25
July	2,460	490	1,490	1.56	.31	.94	1.08
August	445	95	337	.28	.06	.21	.24
September	2,280	520	777	1.44	.33	.49	.55
October	3,200	1,420	2,179	2.03	.90	1.38	1.59
The period	3,200	95	1,403	2.03	.06	.89	4.71

Wanapitei River near Wanapitei

Location—100 feet above the falls known as Timmins Chute, six miles above the Village of Wanapitei, Township of Dryden, Sudbury District.

Records Available—Monthly discharge measurements from August, 1912, to October, 1915. Daily gauge heights from August 15 to October 31, 1915.

Drainage Area—940 square miles.

Gauge—Vertical steel staff with enamelled face, graduated in feet and inches, and fastened on 2 x 8 scantling to a large elm tree on left bank 150 feet above falls. Zero of gauge (elev. 24.00 feet) is referred to bench mark (elev. 30.00 feet) painted on top of prominent rock at brink of falls on right shore.

Channel—Straight for about 500 feet above and 100 feet below gauging station. Banks are high, rocky and wooded, and do not overflow. The bed of the stream is composed of clay and gravel, slightly shifting. The current is moderate.

Discharge Measurements—Made by boat with Price current meter.

Winter Flow—River is covered with ice during the winter months, and measurements are made through ice to determine the winter discharge.

Observer—Wilfred Rioux, Wanapitei.

Discharge Measurements of Wanapitei River near Wanapitei in 1915

Date	Hydrographer	Width in Feet	Area of Section in Sq. Feet	Mean Velocity in Feet per Sec.	Gauge Height in Feet	Discharge in Sec-Feet	Discharge in Second-feet per Square Mile
Jan. 12....	Murray, W. S..	65	344	1.38	24.95	474(a)	.....
Feb. 17....	" ..	70	190	2.54	24.85	484(a)	.....
June 30....	" ..	137	874	1.96	27.83	1,712(b)	.....
July 19....	" ..	136	840	1.65	27.58	1,389	.....
Aug. 17....	" ..	104	595	.82	25.33	490	.....
Sept. 2....	" ..	105	616	.94	25.58	583	.....
Oct. 7....	" ..	112	621	1.04	25.66	647	.....

(a) Ice on control

(b) Logs on control

Monthly Discharge of Wanapitei River near Wanapitei for 1914-5

Drainage Area, 940 Square Miles

Month	Discharge in Second-feet			Discharge in Second-feet per Square Mile			Run-off
	Maximum	Minimum	Mean	Maximum	Minimum	Mean	Depth in Inches on Drainage Area
November (1414)	.....	.....	.....	.....	.....	.....	.....
December “	.....	.....	.....	.....	.....	.....	.....
January ..(1915)	.....	.....	.....	.....	.....	.....	.....
February .....	.....	.....	.....	.....	.....	.....	.....
March .....	.....	.....	.....	.....	.....	.....	.....
April .....	.....	.....	.....	.....	.....	.....	.....
May .....	.....	.....	.....	.....	.....	.....	.....
June .....	.....	.....	.....	.....	.....	.....	.....
July 15-31.....	1,580	715	1,193	1.68	.76	1.27	.74
August	900	490	621	.96	.52	.66	.76
September.....	1,005	530	748	1.07	.56	.80	.89
October	850	620	733	.90	.66	.78	.90
The period.....	1,580	490	777	1.68	.52	.83	3.29

Regular Stations
NORTH-WESTERN ONTARIO DISTRICT

River	Location	Drain- age Area Sq. Miles	Township	County or District
Eagle	at Eagle River.....	970	.....	Kenora Dist.....
English.....	at Caribou Falls.....	.....	.....	" .....
"	at Ear Falls.....	11,700	.....	" .....
"	at Manitou Falls.....	14,600	.....	" .....
"	near Oak Falls.....	15,570	.....	" .....
"	at Sturgeon Falls.....	.....	.....	" .....
Footprint	at Rainy Lake Falls ..	590	.....	Rainy River Dist..
Manitou	at Devil's Cascades....	435	.....	" .....
Seine	at Skunk Rapids.....	2,300	.....	" .....
Turtle	at Mountain Rapids...	1,760	.....	" .....
Wabigoon.....	near Quibell	2,400	.....	" .....
"	at Wabigoon Falls	3,120	.....	Kenora Dist.....

Eagle River at Eagle River

Location—At the highway bridge 1,000 feet south of the C.P. Ry. crossing of the river, and above the Cascades, in the Township of Aubrey, District of Kenora. This river is a branch of the Wabigoon River.

Records Available—Discharge measurements from January, 1914, to October, 1915. Daily gauge heights February 12, 1914, to October 31, 1915.

Drainage Area—970 square miles.

Gauge—Vertical staff with enamelled face screwed to a 2 x 4 inch scantling, which is nailed to the south side of the bridge crib near the south-east corner, and next to the left bank of the river. The zero on the gauge (elev. 1,172.99) is referred to a bench mark (elev. 1,176.56, C.P.R. datum) painted on a point of rock on the left bank a few feet above the cross-section.

Channel and Control—Straight for about 100 feet above the station, with the water flowing slowly. Below the section the channel is straight for about 20 feet, with the water running swiftly to the Cascades. The banks are clean, high, rocky and not liable to overflow. The bed consists of rock, and is permanent. At extreme high water the flow is cut up by the bridge piers, but under normal conditions the flow is all through one channel.

Discharge Measurements—Made from the highway bridge with a small Price current meter.

Winter Flow—Not affected by ice. The water at the section never freezes.

Accuracy—The station rating curve is well defined. Fluctuation in gauge heights is occasionally augmented by wind on Eagle Lake.

Observer—J. Nelson, Eagle River.

Discharge Measurements of Eagle River at Eagle River in 1915

Date	Hydrographer	Width in Feet	Area of Section in Sq. Feet	Mean Velocity in Feet per Sec.	Gauge Height in Feet	Discharge in Sec-Fect	Discharge in Second-feet per Square Mile
Jan. 10....	Taylor, J. R. ...	45	135	2.24	1,174.07	302	.....
Feb. 11....	“ “	40	129	2.02	1,173.87	263	.....
April 22....	Binns, P. V	40	130	2.16	1,173.99	282	.....

Daily Gauge Height and Discharge of Eagle River at Eagle River for 1914-5

Drainage Area 970 Square Miles

[illegible]

Monthly Discharge of Eagle River at Eagle River for 1914-5

Drainage Area, 970 Square Miles

Month	Discharge in Second-feet			Discharge in Second-feet per Square Mile			Run-off
	Maximum	Minimum	Mean	Maximum	Minimum	Mean	Depth in Inches on Drainage Area
November (1914)	388	330	360	.40	.34	.37	.41
December "	355	318	322	.37	.33	.33	.38
January .. (1915)	316	275	300	.33	.28	.31	.36
February	285	261	346	.29	.27	.36	.37
March	285	250	265	.29	.26	.27	.31
April	412	245	283	.42	.25	.29	.32
May	646	419	573	.67	.43	.59	.68
June	747	620	655	.77	.64	.68	.76
July	774	599	706	.80	.62	.73	.84
August	602	383	478	.62	.40	.49	.56
September	364	305	329	.38	.31	.34	.38
October	335	265	298	.35	.27	.31	.36
The year	774	245	410	.80	.25	.42	5.73

English River at Caribou Falls

Location—About 1,200 feet above Caribou Falls, the last falls on the river, and about five miles from the Winnipeg River, District of Kenora.

Records Available—Discharge measurements from May, 1914, to August, 1915.

Drainage Area—21,600 square miles.

Gauge—Vertical staff located on the left bank of the river 25.6 feet north of a blazed jack pine, which is used as the initial point for soundings. The zero on the gauge (elevation 100.00) is referred to a bench mark (elevation 109.45) painted on a point of rock 16 feet south of the blazed jack pine.

Channel and Control—Above the station the channel takes a 90 degree curve to the right, thence following comparatively straight to the head of the falls. Both banks are high, rocky and wooded, and not liable to overflow. The bed of the stream is rocky, with large boulders or protruding shelves of rock and practically permanent. The water at the left bank is still, backwater existing at higher stages. The natural control is wide and unobstructed.

Discharge Measurements—Made from a canoe, and occasionally through ice, with a small Price current meter.

Winter Flow—Ice conditions make little or no difference, the channel being rarely frozen over.

Accuracy—The measured discharge is probably slightly in excess of the true value.

Discharge Measurements of English River at Caribou Falls in 1915

Date	Hydrographer	Width in Feet	Area of Section in Sq. Feet	Mean Velocity in Feet per Sec.	Gauge Height in Feet	Discharge in Sec-Feet	Discharge in Second-feet per Square Mile
Mar. 5....	Binns, P.V.....	234	9,762	0.68	100.84	6,606 (a)	.31
May 10....	".....	236	10,044	0.96	101.83	9,619	.45
July 12....	".....	240	10,262	1.28	102.67	12,900	.60
Aug. 15....	Carmichael, R.M	240	10,191	1.17	102.44	11,890	.55

(a) Boat and ice measurement. Section mostly ice covered. Ice above and below section

English River at Ear Falls

Location—At the foot of Lac Seul, about three miles below Pine Ridge Hudson's Bay Co's. Post, and about ¼ mile above upper Ear Falls, District of Kenora.

Records Available—Discharge measurements from July, 1914, to October, 1915. Bi-weekly gauge heights, February 1 to October 31, 1915.

Drainage Area—11,700 square miles.

Gauge—Vertical staff with enamelled face screwed to a 6-inch hewn spruce post which is firmly wedged in the rock of the left bank 200 feet below a 2-inch poplar, which is painted white and used as the initial point for soundings. The zero on the gauge (elev. 115.12) is referred to a bench mark (elev. 122.75) painted on a point of rock 5 feet above the gauge.

Channel and Control—Straight for about 300 feet above and below the station, then turning to the left widens out to the top of the falls. Both banks are high, rocky and wooded, and will not overflow. The bed of the stream at the section is apparently permanent; the current sluggish, and flowing through one channel at all stages. The natural control is wide, shallow and unobstructed.

Discharge Measurements—Made from a canoe with a small Price current meter.

Winter Flow—Ice conditions make little difference, the channel rarely freezing over.

Accuracy—Backwater at the left bank causes a little difficulty in making accurate discharge measurements.

Observer—Chas. McIvor, care of Hudson's Bay Co's. Lac Seul Post, Sioux Lookout P.O.

Remarks—The very steady regimen of the English River, together with the lack of gauge readers, makes it possible and necessary to apply the gauge heights at Ear Falls to gauges at Manitou and Oak Falls. Gauge readings taken on nearly the same day were used in making up curves for the three stations, and the results obtained justify the assumptions made. No allowance is made for lag. With additional data it may be possible to extend the system to points farther down the river.

Discharge Measurements of English River at Ear Falls in 1914-5

Date	Hydrographer	Width in Feet	Area of Section in Sq. Feet	Mean Velocity in Feet per Sec.	Gauge Height in Feet	Discharge in Sec-Feet	Discharge in Second-feet per Square Mile
Jan. 29....	Binns, P. V	333	8,184	0.55	118.41	4,545(a)	.....
Mar. 31....	"	332	8,146	0.52	118.01	4,211(b)	.....
June 1....	"	336	8,677	0.83	119.61	7,233	.....
" 17....	"	337	8,710	0.90	119.68	7,871	.....
July 13....	Carmichael, R.M	338	8,777	0.96	119.89	8,400	.....
Sept 5....	"	336	8,575	0.76	119.31	6,559(c)	.....
Oct. 16....	"	335	8,608	0.80	119.43	6,903	.....

- (a) Ice measurement.
- (b) Boat measurement; ice on Lac Seul; open water to Pine Ridge and down to falls.
- (c) Water very rough; unable to hold canoe steady; strong unstream wind.

Monthly Discharge of English River at Ear Falls for 1914-5

Drainage Area, 11,700 Square Miles

Month	Discharge in Second-feet			Discharge in Second-feet per Square Mile			Run-off Depth in Inches on Drainage Area
	Maximum	Minimum	Mean	Maximum	Minimum	Mean	
November..(1914)							
December ..							
January ...1915)							
February	4,670	4,340	4,559	.40	.37	.39	.41
March	4,396	4,080	4,178	.37	.35	.36	.42
April	4,640	4,010	4,169	.40	.34	.36	.40
May	6,690	4,790	5,641	.57	.41	.48	.55
June	8,210	7,330	7,712	.70	.63	.66	.74
July	8,670	8,030	8,386	.74	.69	.72	.83
August	8,210	6,690	7,462	.70	.57	.64	.74
September	6,690	5,520	6,155	.57	.47	.53	.59
October	7,050	6,110	6,634	.60	.52	.57	.66
The period.....	8,670	4,010	5,688	.74	.34	.49	5.34

English River at Manitou Falls

Location—About 800 feet above the first chute of the Manitou Falls, and five miles below the mouth of the Mattawa River and the old Mattawa H. B. Co's. Post. Cedar River enters the English River $\frac{1}{2}$ mile below the metering section.

Records Available—Discharge measurements from July, 1914, to October, 1915. Bi-weekly gauge heights interpolated from Ear Falls gauge heights from February 1 to October 31, 1915.

Drainage Area—14,600 square miles.

Gauge—Vertical staff with enamelled face screwed to a 6-inch pine post and firmly wedged and wired to the right bank 15 feet south of a 2-inch jack pine, which is used as the initial point for soundings. The zero on the gauge (elev. 89.42) is referred to a bench mark (elev. 100.43) painted on a point of rock 2.5 feet south-east of the initial point.

Channel and Control—About 1,200 feet above the station the channel begins to narrow down and turns to the right out of the lake above. It is comparatively straight thence to the station and falls. Both banks are high, rocky and wooded, and will not overflow. The bed of the stream is rocky and permanent. The current is slow above and moderately swift at the section.

Discharge Measurements—Made from a canoe with a small Price current meter.

Remarks—The very steady regimen of the English River, together with the lack of gauge readers, makes it possible and necessary to apply the gauge heights at Ear Falls to the gauge at Manitou Falls. Gauge readings taken on nearly the same day were used in making up curves for the two stations, and the results obtained justify the assumptions made. No allowance is made for "lag."

Discharge Measurements of English River at Manitou Falls in 1915

Date	Hydrographer	Width in Feet	Area of Section in Sq. Feet	Mean Velocity in Feet per Sec.	Gauge Height in Feet	Discharge in Sec-Feet	Discharge in Second-feet per Square Mile
Jan. 26....	Binns, P. V.	274	5,947	.91	89.85	5,384(a)	.....
Mar. 18....	" "	170	3,011	1.46	88.68	4,402(b)	.....
May 31....	" "	189	3,754	2.38	92.79	8,925	.....
June 18....	Carmichael, R.M	190	3,809	2.48	93.10	9,435	.....
July 14....	" "	193	3,946	2.56	93.72	10,103	.....
Sept. 6....	" "	183	3,638	2.19	92.22	7,951	.....
Oct. 17....	" "	184	3,712	2.35	92.60	8,728	.....

(a) Ice measurement 250 feet above regular section.

(b) Boat measurement at regular section. Slabs of thick ice lining banks. Narrow open channel to falls; ice covered 200 feet above section.

Daily Gauge Height and Discharge of English River at Manitou Falls for 1914-5

Drainage Area, 14,600 Square Miles

Day	November		December		January		February		March		April		May		June		July		August		September		October	
	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge
	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.
1	89.69	5220	89.29	4880	88.51	4320	89.97	5490	92.93	9060	93.47	9760	93.37	9630	92.16	8060	92.05	7910						
2	89.74	5270	88.96	4610	88.42	4260	90.29	5810	92.82	8920														
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NOTE.—Gauge heights interpolated from those read at Ear Falls and discharges applied from Manitou Falls rating curve.

Monthly Discharge of English River at Manitou Falls for 1914-5

Drainage Area, 14,600 Square Miles

Month	Discharge in Second-feet			Discharge in Second-feet per Square Mile			Run-off
	Maximum	Minimum	Mean	Maximum	Minimum	Mean	Depth in Inches on Drainage Area
November. (1914)							
December. "							
January ..(1915)							
February	5,310	4,790	5,144	.36	.33	.35	.36
March	4,880	4,320	4,488	.33	.30	.31	.36
April	5,260	4,170	4,307	.36	.29	.29	.32
May	8,060	5,490	6,674	.55	.38	.46	.53
June.....	9,630	8,790	9,161	.66	.60	.63	.70
July	10,050	9,460	9,786	.69	.65	.67	.77
August	9,630	8,060	8,890	.66	.55	.61	.70
September	8,060	6,480	7,347	.55	.44	.50	.56
October.....	8,460	7,330	7,978	.58	.50	.54	.62
The period.....	10,050	4,170	6,500	.69	.29	.44	4.92

English River near Oak Falls

Location—About one mile above the upper fall of Oak Falls, and about one-half mile below Wilcox Lake, District of Kenora.

Records Available—Discharge measurements from August, 1914, to October, 1915. Bi-weekly gauge heights interpolated from observations at Ear Falls from February 1 to October 31, 1915.

Drainage Area—15,570 square miles.

Gauge—Vertical staff with enamelled face screwed to a cedar post and firmly wedged in rock on the right bank 200 feet above the metering section. The zero on the gauge (elev. 194.09) is referred to a bench mark (elev. 200.00) painted on a rock in the river near the right bank and 20 feet above the final point for soundings. The initial point for soundings is located on the left bank, and consists of the head of a nail driven in the side of a 12-inch poplar blazed and marked I.P., N. 70° W.

Channel and Control—Straight for about 300 feet above and $\frac{1}{2}$ mile below the station. Both banks are high, rocky and wooded, and not liable to overflow. The bed of the stream is rocky and practically permanent. The current is sluggish above and moderately swift below the station, a small rapid existing about 800 feet below.

Discharge Measurements—Made from a canoe with a small Price current meter.

Remarks—The very steady regimen of the English River, together with the lack of gauge readers, makes it possible and necessary to apply the gauge heights at Ear Falls to the gauge at Oak Falls. Gauge readings taken on nearly the same day were used in making up curves for the two stations, and the results obtained justify the assumptions made. No allowance is made for lag.

Discharge Measurements of English River near Oak Falls in 1915

Date	Hydrographer	Width in Feet	Area of Section in Sq. Feet	Mean Velocity in Feet per Sec.	Gauge Height in Feet	Discharge in Sec-Feet	Discharge in Second-feet per Square Mile
Feb. 1.....	Binns, P. V.....	373	6,071	.99	195.02	6,035 (a)	.....
Mar. 15....	".....	371	5,921	.84	194.48	4,958 (b)	.....
May 29....	".....	390	6,774	1.43	196.53	9,662	.....
June 20....	Carmichael, R.M	392	6,812	1.45	196.63	9,890	.....
July 17....	".....	396	6,970	1.55	196.97	10,812	.....
Sept. 8....	".....	385	6,615	1.25	196.15	8,268	.....
Oct. 19....	".....	389	6,734	1.39	196.42	9,358	.....

(a) Ice covered. Open water 300 feet down stream.

(b) Section nearly all open. Ice cover above and below ; boat and ice measurement.

Monthly Discharge of English River near Oak Falls for 1914-5

Drainage Area, 15,570 Square Miles

Month	Discharge in Second-feet			Discharge in Second-feet per Square Mile			Run-off Depth in Inches on Drainage Area
	Maximum	Minimum	Mean	Maximum	Minimum	Mean	
November (1914)	.....	.....	.....	.....	.....	.....	.....
December. "	.....	.....	.....	.....	.....	.....	.....
January ... (1915)	.....	.....	.....	.....	.....	.....	.....
February	5,910	5,360	5,739	.38	.34	.37	.38
March	5,450	4,880	5,047	.35	.31	.32	.37
April.	5,870	4,650	5,001	.37	.30	.32	.36
May.	8,540	6,080	7,217	.55	.39	.46	.53
June	10,340	9,290	9,741	.66	.60	.63	.70
July	10,920	10,080	10,520	.70	.65	.68	.78
August	10,340	8,540	9,451	.66	.55	.61	.70
September	8,540	7,100	7,889	.55	.46	.51	.57
October	8,980	7,840	8,477	.58	.50	.57	.66
The period	10,920	4,650	7,106	.70	.30	.46	5.05

English River at Sturgeon Falls

Location—About 300 feet above the lowest of the three falls known as Sturgeon Falls, District of Kenora, and about 30 miles above the Winnipeg River.

Records Available—Discharge measurements from June, 1914, to August, 1915.

Drainage Area—Not measured.

Gauge—Vertical staff with enamelled face, screwed to a 5" hewn spruce post firmly wedged and braced to the left bank about 150 feet below the metering section. The zero on the gauge (elevation 91.52) is referred to a bench mark (elevation 100.00) painted on the left bank 10 feet from the initial point and two feet below the line of section. The initial point for soundings is a nail driven in the side of a 6-inch blazed poplar on the left bank, and marked I.P., N. 10° E.

Channel and Control—There are deep bays on both sides of the river above the station, from which the channel takes a gentle curve to the left, thence flowing comparatively straight and narrowing to the station and falls. The bed is composed of rock with a little gravel in the centre, and practically permanent. Both banks are high, rocky and wooded, and will not overflow. The velocity is low at the right bank, and very slight backwater existing at the left.

Discharge Measurements—Made from a canoe with a small Price current meter.

Discharge Measurements of English River at Sturgeon Falls in 1915

Date	Hydrographer	Width in Feet	Area of Section in Sq. Feet	Mean Velocity in Feet per Sec.	Gauge Height in Feet	Discharge in Sec-Feet	Discharge in Second-feet per Square Mile
May 12....	Binns, P. V	348	8,195	1.12	92.02	9,172	.....
July 14....	" "	377	8,987	1.36	94.26	12,278	.....
Aug. 17....	Carmichael, R.M	360	8,766	1.28	93.69	11,247	.....

Footprint River at Rainy Lake Falls

Location—100 feet above the crest of the lowest fall, at the mouth of the Footprint River where it flows into the north-west bay of Rainy Lake, on Indian Reserve 17A, District of Rainy River.

Records Available—Monthly discharge measurements from July, 1914. Daily gauge heights, Sept. 18, 1914, to Oct. 31, 1915.

Drainage Area—425 square miles.

Gauge—Vertical steel staff gauge, graduated in feet and in inches. The zero on the gauge (elevation 101.30) is referred to a bench mark (elevation 110.51) painted on the ledge of a rock on right bank.

Channel—About 40 feet above the station the channel curves to the left and then runs straight for about 140 feet, dropping into Rainy Lake. The banks are high, rocky, wooded, and not liable to overflow. The right bank has been burnt over. The bed of the river contains large boulders, and one channel exists at all stages.

Discharge Measurements—Made from canoe with small Price current meter.

Winter Flow—Relation to gauge height to discharge not affected by ice.

Regulation—Occasional operations of the dam at Footprint Lake cause fluctuations in the river at the gauge.

Accuracy—The rating curve is well defined. Open water curve used throughout the year.

Observer—John Lyons, Fort Frances P.O.

Discharge Measurements of Footprint River at Rainy Lake Falls in 1915

Date	Hydrographer	Width in Feet	Area of Section in Sq. Feet	Mean Velocity in Feet per Sec.	Gauge Height in Feet	Discharge in Sec-Feet	Discharge in Second-feet per Square Mile
Jan. 30....	Taylor, J. R....	47	62	2.04	101.78	126	.....
Feb. 2....	"	47	62	1.94	101.78	120	.....
Mar. 6....	"	45	62	1.79	101.61	110	.....
Apr. 2....	"	45	58	1.69	101.55	97	.....
" 2....	"	45	58	1.69	101.55	97	.....
June 23....	"	62	153	3.61	103.44	552	.....
July 30....	"	60	136	3.13	103.06	427	.....
Aug. 24....	"	54	97	2.24	102.38	217	.....
Sept. 8....	"	53	86	1.68	102.09	145	.....
" 29....	"	45	53	1.45	101.40	77	.....

Daily Gauge Height and Discharge of Footprint River at Rainy Lake Falls for 1914-5

Drainage Area. 425 Square Miles

Day	November		December		January		February		March		April		May		June		July		August		September		October	
	November		December		January		February		March		April		May		June		July		August		September		October	
	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge
	Feet	Sec-ft.	Feet	Sec-ft.	Feet	Sec-ft.	Feet	Sec-ft.	Feet	Sec-ft.	Feet	Sec-ft.	Feet	Sec-ft.	Feet	Sec-ft.	Feet	Sec-ft.	Feet	Sec-ft.	Feet	Sec-ft.	Feet	Sec-ft.
1	101.50	90	101.61	101	101.61	101	101.78	127	101.65	107	101.55	95	101.57	97	103.78	755	103.48	605	102.97	389	102.26	207	101.42	82
2	101.49	89	101.61	101	101.61	101	101.78	127	101.65	107	101.55	95	101.57	97	103.76	745	103.48	605	102.92	372	102.26	207	101.40	80
3	101.49	89	101.61	101	101.61	101	101.78	127	101.61	101	101.55	95	101.57	97	103.76	745	103.48	605	102.92	372	102.13	181	101.34	74
4	101.49	89	101.61	101	101.61	101	101.61	101	101.61	101	101.55	95	101.63	104	103.76	745	103.40	565	102.88	359	102.13	181	101.34	74
5	101.49	89	101.61	101	101.61	101	101.61	101	101.61	101	101.40	80	101.63	104	103.76	745	103.40	565	102.88	359	102.13	181	101.34	74
6	101.49	89	101.61	101	101.61	101	101.78	127	101.61	101	101.40	80	101.63	104	103.78	755	103.40	565	102.88	359	102.13	181	101.38	78
7	101.49	89	101.61	101	101.61	101	101.78	127	101.63	104	101.40	80	101.63	104	103.78	755	103.40	565	102.88	359	102.09	173	101.38	78
8	101.49	89	101.61	101	101.61	101	101.78	127	101.63	104	101.40	80	101.55	95	103.78	755	103.40	565	102.88	259	102.07	170	101.38	78
9	101.49	89	101.61	101	101.61	101	101.78	127	101.63	104	101.40	80	101.53	93	103.78	755	103.38	555	102.84	359	102.05	167	101.38	78
10	101.49	89	101.61	101	101.61	101	101.78	127	101.63	104	101.40	80	101.53	93	103.78	755	103.38	555	102.84	359	102.05	167	101.38	78
11	101.49	89	101.61	101	101.61	101	101.78	127	101.63	104	101.40	80	101.53	93	103.78	755	103.38	555	102.84	359	102.05	167	101.38	78
12	101.49	89	101.61	101	101.61	101	101.78	127	101.63	104	101.40	80	101.53	93	103.82	777	103.38	555	102.84	359	101.92	148	101.38	78
13	101.49	89	101.61	101	101.65	107	101.65	107	101.63	104	101.40	80	101.53	93	103.78	755	103.38	555	102.84	359	101.92	148	101.40	80
14	101.49	89	101.61	101	101.78	127	101.65	107	101.63	104	101.40	80	101.55	95	103.78	755	103.38	555	102.88	359	101.92	148	101.40	80
15	101.49	89	101.61	101	101.78	127	101.65	107	101.65	107	101.40	80	101.57	97	103.78	755	103.38	555	102.80	335	101.88	142	101.38	78
16	101.49	89	101.61	101	101.78	127	101.65	107	101.63	104	101.40	80	101.57	97	103.78	755	103.38	555	102.80	335	101.80	130	101.38	78
17	101.49	89	101.61	101	101.78	127	101.65	107	101.63	104	101.40	80	101.57	97	103.55	630	103.38	555	102.80	335	101.76	124	101.38	78
18	101.49	89	101.61	101	101.78	127	101.65	107	101.63	104	101.40	80	101.57	97	103.55	630	103.38	555	102.80	335	101.76	124	101.38	78
19	101.49	89	101.61	101	101.78	127	101.65	107	101.63	104	101.40	80	104.07	1027	103.55	630	103.38	555	102.76	325	101.72	118	101.38	78
20	101.49	89	101.61	101	101.78	127	101.65	107	101.63	104	101.40	80	104.07	1027	103.44	585	103.38	555	102.55	272	101.72	118	101.38	78
21	101.49	89	101.61	101	101.78	127	101.65	107	101.63	104	101.40	80	103.99	879	103.44	585	103.38	555	102.42	240	101.68	112	101.38	78
22	101.49	89	101.61	101	101.78	127	101.65	107	101.63	104	101.40	80	104.03	1003	103.44	585	103.38	555	102.42	240	101.68	112	101.38	78
23	101.61	101	101.61	101	101.78	127	101.65	107	101.63	104	101.40	80	104.03	1003	103.44	585	103.38	555	102.38	251	101.55	95	101.38	78
24	101.61	101	101.61	101	101.78	127	101.65	107	101.63	104	101.40	80	104.03	1003	103.46	595	103.38	555	102.38	251	101.47	87	101.38	78
25	101.61	101	101.61	101	101.78	127	101.65	107	101.63	104	101.44	84	104.03	1003	103.46	595	103.05	417	102.38	251	101.47	87	101.38	78
26	101.61	101	101.61	101	101.78	127	101.65	107	101.63	104	101.49	89	103.99	879	103.46	595	103.05	417	102.42	240	101.38	78	101.38	78
27	101.61	101	101.61	101	101.78	127	101.65	107	101.63	104	101.49	89	103.95	855	103.50	615	103.05	417	102.42	240	101.38	78	101.34	74
28	101.61	101	101.61	101	101.78	127	101.65	107	101.63	104	101.53	93	103.95	855	103.50	615	103.05	417	102.50	215	101.58	78	101.34	74
29	101.61	101	101.61	101	101.78	127	.....	.....	101.55	95	101.53	93	103.95	855	103.48	605	103.01	403	102.50	215	101.58	78	101.34	74
30	101.61	101	101.61	101	101.78	127	.....	.....	101.55	95	101.57	97	103.78	755	103.48	605	102.97	389	102.50	215	101.58	78	101.34	74
31	.....	.....	101.61	101	101.78	127	.....	.....	101.55	95	.....	.....	103.78	755	.....	.....	103.01	403	102.50	215	.....	.....	101.34	74

Monthly Discharge of Footprint River at Rainy Lake Falls for 1914-5

Drainage Area, 425 Square Miles

Month	Discharge in Second-feet			Discharge in Second-feet per Square Mile			Run-off
	Maximum	Minimum	Mean	Maximum	Minimum	Mean	Depth in Inches on Drainage Area
November (1914)	101	89	92	.24	.21	.22	.25
December ..	101	101	101	.24	.24	.24	.28
January.. (1915)	127	101	116	.30	.24	.27	.31
February	127	101	114	.30	.24	.27	.28
March	107	95	103	.25	.22	.24	.28
April	97	80	85	.23	.19	.20	.22
May	1,027	93	440	2.42	.22	1.03	1.19
June	777	585	683	1.83	1.38	1.61	1.80
July	605	389	522	1.42	.92	1.23	1.42
August	389	215	322	.92	.51	.76	.88
September	207	78	135	.49	.18	.32	.36
October	82	74	77	.19	.17	.18	.21
The year	1,027	74	233	2.42	.17	.55	7.48

Manitou River at Devil's Cascades

Location—About 150 feet below the old dam, at the head of the Devil's Cascades, Rainy River District.

Records Available—Monthly discharge measurements from July, 1914. Daily gauge heights, July 15, 1914, to Oct. 31, 1915.

Drainage Area—435 square miles.

Gauge—An inclined steel staff, graduated in feet and inches, and located on the face of the old dam. The zero of the gauge is at an elevation of 139.38 feet referred to a bench mark (elevation 147.37) painted on a rock 1 foot east of the initial point for soundings.

Channel—Straight for about 150 feet above and 400 feet below the station. The right bank is high, rocky, wooded, and not liable to overflow, but the left bank is low and wooded, with a gradually rising bank, which is not liable to overflow unless the dam is operated. The bed of the stream is composed of rock, and the current is slow, one channel existing at all stages.

Discharge Measurements—Made from canoe or ice with a small Price current meter.

Winter Flow—The relation of gauge height to discharge is affected by ice during the cold period, and measurements are made to determine the winter flow.

Regulation—Several dams exist on the river between the section and Manitou Lake, which are not in operation at present. The operation of the dam just above the station causes fluctuations at the gauge.

Accuracy—A fairly well-defined rating curve has been developed, and records are considered fair.

Observer—S. H. Baldwin, Box No. 250, Fort Frances.

Discharge Measurements of Manitou River at Devil's Cascades in 1915

Date	Hydrographer	Width in Feet	Area of Section in Sq. Feet	Mean Velocity in Feet per Sec.	Gauge Height in Feet	Discharge in Sec-Feet	Discharge in Second-feet per Square Mile
Jan. 31....	Taylor, J. R. ...	97	435	0.41	143.57	180	.....
Feb. 1....	"	97	435	0.43	143.58	187	.....
Mar. 5....	"	97	426	0.43	143.53	186	.....
Apr. 1....	"	97	416	0.43	143.44	179	.....
May 19....	"	99	487	0.58	144.12	280	.....
June 23....	"	99	496	0.58	144.21	288	.....
July 31....	"	99	493	0.65	144.24	319	.....
Aug. 25....	"	99	465	0.58	143.93	269	.....
Sept. 8....	"	98	455	0.53	143.80	239	.....

Daily Gauge Height and Discharge of Manitou River at Devil's Cascades for 1914-5
Drainage Area, 435 Square Miles

Day	November			December			January			February			March			April			May			June			July			August			September			October																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	Gauge Ht.	Dis- charge	Feet	Gauge Ht.	Dis- charge	Feet	Gauge Ht.	Dis- charge	Feet	Gauge Ht.	Dis- charge	Feet	Gauge Ht.	Dis- charge	Feet	Gauge Ht.	Dis- charge	Feet	Gauge Ht.	Dis- charge	Feet	Gauge Ht.	Dis- charge	Feet	Gauge Ht.	Dis- charge	Feet	Gauge Ht.	Dis- charge	Feet	Gauge Ht.	Dis- charge	Feet																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						

Monthly Discharge of Manitou River at Devil's Cascades for 1914-5

Drainage Area, 435 Square Miles

Month	Discharge in Second-feet			Discharge in Second-feet per Square Mile			Run-off
	Maximum	Minimum	Mean	Maximum	Minimum	Mean	Depth in Inches on Drainage Area
November.(1914)	225	202	211	.52	.46	.49	.55
December. “	201	188	195	.46	.43	.45	.52
January ..(1915)	188	183	185	.44	.42	.43	.50
February	186	183	185	.43	.42	.43	.45
March.....	186	179	184	.43	.41	.42	.48
April.....	219	179	192	.50	.41	.44	.49
May.....	286	219	254	.66	.50	.58	.67
June	352	219	278	.81	.50	.64	.71
July.....	352	305	326	.81	.70	.75	.86
August	300	232	264	.69	.53	.61	.70
September.....	229	206	213	.53	.47	.49	.55
October.....	216	188	206	.50	.43	.47	.54
The year	352	179	225	.81	.41	.51	7.02

Seine River at Skunk Rapids

Location—About 200 feet above Skunk Rapids, and 1 mile upstream from the Canadian Northern Ry. bridge. One-half mile north of the C. N. Ry. tracks, and 1 mile west of La Seine Station, in the District of Rainy River.

Records Available—Discharge measurements from August, 1914. Daily gauge heights, Sept. 22, 1914, to April 30, 1915, and Oct. 1 to 31, 1915.

Drainage Area—2,300 square miles.

Gauge—Vertical steel staff gauge with enamelled face, graduated in feet and inches, and located near La Seine station, on the C. N. Ry. The zero on the gauge is at an elevation of 87.72 feet, which is referred to a bench mark (assumed elevation 100.00) painted on a large boulder, on the right bank of the river, 6 feet from a 6-inch poplar tree used as a final point for soundings. The initial point is on the left bank and consists of a 2-inch spruce tree, blazed and marked I.P. with white paint. "H. E. P. Comm." is painted on the rock directly below the spruce tree.

Channel and Control—Straight for about 500 feet above and 200 feet below the station to the rapids. The right bank of the river curves into a point at the rapids forming a narrow channel. The velocity of the river is slow and the banks are high, rocky and wooded. This land has been burnt over, but most of the trees are still standing. The bed of the stream is sandy and clean, with a few boulders near the right bank. One channel exists at all stages.

Discharge Measurements—Made from canoe with a small Price current meter.

Winter Flow—The relation of gauge height to discharge is affected by ice during the winter months and measurements are made to determine the winter flow.

Accuracy—Open water rating curve is fairly well defined and estimates are considered good.

Observer—Wm. Clark, Flanders.

Discharge Measurements of Seine River at Skunk Rapids in 1915

Date	Hydrographer	Width in Feet	Area of Section in Sq. Feet	Mean Velocity in Feet per Sec.	Gauge Height in Feet	Discharge in Sec-Feet	Discharge in Second-feet per Square Mile
Jan. 27....	Taylor, J. R.	173	1,585	.39	95.50	620 (a)	.....
Feb. 26....	"	168	1,486	.36	95.12	543 (b)	.....
Mar. 29....	"	167	1,554	.30	94.97	469 (a)	.....
April 5....	"	167	1,641	.28	94.84	459	.....
May 20....	"	197	2,059	.75	95.86	1,540	.....
June 28....	"	206	2,280	1.12	97.96	2,553	.....
July 23....	"	203	2,179	.97	97.54	2,117	.....
" 24....	"	203	2,217	.98	97.63	2,185	.....
Aug. 30....	"	187	1,886	.54	96.12	1,026	.....
" 31....	"	187	1,886	.53	96.07	1,008	.....
Sept. 1....	"	187	1,886	.53	96.03	1,005	.....
" 1....	"	188	1,867	.53	95.99	990	.....
Oct. 1....	"	189	1,942	.59	96.32	1,154	.....

(a) Ice measurement.

(b) Ice measurement; river frozen to rapids; rapids free of ice.

Daily Gauge Height and Discharge of Seine River at Skunk Rapids for 1914-5

Drainage Area, 2,300 Square Miles

Day	November		December		January		February		March		April		May		June		July		August		September		October	
	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge		
																							Feet	Sec-ft.
1	96.74	1400	96.58	1070	95.83	800	95.53	604	95.04	535	.....	460	.....	.....	.....	.....	.....	.....	.....	.....	.....	96.32	1137
2	96.72	1385	96.56	1072	95.75	792	95.49	600	95.03	532	.....	458	.....	.....	.....	.....	.....	.....	.....	.....	.....	96.34	1148
3	96.74	1400	96.56	1074	95.76	782	95.47	597	95.03	530	.....	457	.....	.....	.....	.....	.....	.....	.....	.....	.....	96.34	1148
4	96.73	1392	96.55	1077	95.74	774	95.50	595	.....	527	.....	458	.....	.....	.....	.....	.....	.....	.....	.....	.....	96.36	1159
5	96.72	1385	96.53	1080	95.70	766	95.50	594	.....	523	94.87	459	.....	.....	.....	.....	.....	.....	.....	.....	.....	96.34	1148
6	96.72	1385	96.51	1080	95.69	758	95.50	592	.....	520	95.01	459	.....	.....	.....	.....	.....	.....	.....	.....	.....	96.36	1159
7	96.72	1385	96.49	1080	95.67	751	95.45	588	.....	517	95.18	459	.....	.....	.....	.....	.....	.....	.....	.....	.....	96.41	1187
8	96.72	1385	96.48	1075	95.65	744	95.45	586	.....	514	95.93	459	.....	.....	.....	.....	.....	.....	.....	.....	.....	96.45	1215
9	96.72	1385	96.45	1070	95.62	736	95.45	583	.....	511	96.14	459	.....	.....	.....	.....	.....	.....	.....	.....	.....	96.49	1243
10	96.70	1370	96.41	1060	95.62	727	95.42	582	.....	509	96.10	459	.....	.....	.....	.....	.....	.....	.....	.....	.....	96.47	1229
11	96.68	1140	96.37	1045	95.03	720	95.38	579	.....	507	96.10	459	.....	.....	.....	.....	.....	.....	.....	.....	.....	96.55	1280
12	96.64	1135	96.31	1010	95.04	714	95.38	577	.....	505	95.80	479	.....	.....	.....	.....	.....	.....	.....	.....	.....	96.60	1286
13	96.68	1130	96.27	990	95.04	707	95.34	576	.....	503	95.75	500	.....	.....	.....	.....	.....	.....	.....	.....	.....	96.64	1334
14	96.69	1125	96.24	970	95.05	700	95.32	575	.....	500	95.70	522	.....	.....	.....	.....	.....	.....	.....	.....	.....	96.70	1370
15	96.69	1120	96.19	955	95.05	694	95.29	575	.....	495	95.71	545	.....	.....	.....	.....	.....	.....	.....	.....	.....	96.72	1385
16	96.68	1115	96.18	940	95.05	687	95.27	572	.....	494	95.60	569	.....	.....	.....	.....	.....	.....	.....	.....	.....	96.74	1400
17	96.63	1110	96.15	932	95.06	680	95.25	571	.....	494	95.46	594	.....	.....	.....	.....	.....	.....	.....	.....	.....	96.80	1445
18	96.62	1105	96.10	920	95.06	673	95.23	570	.....	489	95.39	620	.....	.....	.....	.....	.....	.....	.....	.....	.....	96.82	1460
19	96.62	1102	96.07	910	95.06	666	95.22	572	.....	485	95.38	647	.....	.....	.....	.....	.....	.....	.....	.....	.....	96.89	1512
20	96.60	1098	96.03	898	95.07	660	95.20	571	.....	482	95.32	675	.....	.....	.....	.....	.....	.....	.....	.....	.....	96.93	1544
21	96.59	1095	96.04	890	95.07	652	95.18	572	.....	478	95.33	704	.....	.....	.....	.....	.....	.....	.....	.....	.....	96.98	1584
22	96.58	1090	96.03	880	95.07	648	95.15	571	.....	477	95.34	734	.....	.....	.....	.....	.....	.....	.....	.....	.....	97.02	1618
23	96.60	1087	96.01	870	96.08	642	95.13	567	.....	476	95.36	765	.....	.....	.....	.....	.....	.....	.....	.....	.....	97.07	1663
24	96.57	1085	96.00	860	95.44	635	95.10	560	.....	474	95.42	797	.....	.....	.....	.....	.....	.....	.....	.....	.....	97.16	1747
25	96.56	1083	95.98	850	95.50	630	95.09	549	.....	472	95.49	830	.....	.....	.....	.....	.....	.....	.....	.....	.....	97.18	1766
26	96.56	1080	95.96	840	95.51	625	95.07	543	.....	471	95.52	864	.....	.....	.....	.....	.....	.....	.....	.....	.....	97.20	1785
27	96.54	1077	95.93	834	95.51	620	95.07	540	.....	470	95.55	899	.....	.....	.....	.....	.....	.....	.....	.....	.....	97.24	1821
28	96.54	1074	95.88	827	95.51	615	95.06	537	.....	469	95.63	935	.....	.....	.....	.....	.....	.....	.....	.....	.....	97.30	1875
29	96.55	1070	95.83	820	95.52	611	.....	.....	.....	469	95.62	972	.....	.....	.....	.....	.....	.....	.....	.....	.....	97.32	1893
30	96.55	1070	95.79	813	95.52	610	.....	.....	.....	464	95.62	1010	.....	.....	.....	.....	.....	.....	.....	.....	.....	97.34	1911
31	.....	.....	95.76	807	95.50	606	.....	.....	.....	462	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

NOTE.—Relation of gauge height to discharge affected by ice from Nov. 11th, 1914, to April 19th, 1915; discharge for the period estimated from discharge measurements, observer's notes, and climatologic records.

Monthly Discharge of Seine River at Skunk Rapids for 1914 -5

Drainage Area, 2,300 Square Miles

Month	Discharge in Second-feet			Discharge in Second-feet per Square Mile			Run-off
	Maximum	Minimum	Mean	Maximum	Minimum	Mean	Depth in Inches on Drainage Area
November. (1914)	1,400	1,070	1,195	.61	.47	.52	.58
December. "	1,080	807	955	.47	.35	.42	.48
January .. (1915)	800	606	692	.35	.26	.30	.35
February	604	537	575	.26	.23	.25	.26
March	535	462	495	.23	.20	.22	.25
April	1,010	457	624	.44	.20	.27	.30
May							
June							
July							
August							
September							
October							
The period	1,400	457	757	.61	.20	.33	2.22

Turtle River at Mountain Rapids

Location—About 300 feet above Mountain Rapids, and about 8 miles from the Olive Mine. 12 miles from Mine Centre, which is on the C. N. Ry., in the Rainy River District.

Records Available—Monthly discharge measurements from August, 1914. Daily gauge heights, Aug. 9, 1914, to Oct. 31, 1915.

Drainage Area—1,760 square miles.

Gauge—Vertical steel staff gauge with enamelled face, graduated in feet and inches, and fastened on a crib pier at the C. N. Ry. saw mill, 12 miles from the station. The gauge is located 1,000 feet south of the mouth of Little Turtle River, on the east shore of Little Turtle Lake. Zero on gauge (elevation 83.89) is referred to a bench mark established on a rock with white paint, on the left bank of the river, four feet south of a blazed pine tree, marked I.P. with white paint, which is used as the initial point for soundings. The elevation of this bench mark is 96.00, which is referred to another bench mark (assumed elevation 100.00) established on a rock with white paint, 35 feet north-east of the gauge, at the C. N. Ry. Mill at Mine Centre.

Channel and Control—Straight for about 1,000 feet above and below the station, the water running slowly. The banks are high, wooded and rocky. The bed of the stream is sandy and clean, one channel existing at all stages. The river is used extensively for log driving, and the log jams in Otter Falls affect the section somewhat.

Discharge Measurements—Made from a canoe with a small Price current meter.

Winter Flow—The relation of gauge height to discharge is seriously affected by ice and measurements are made during the winter to determine the flow.

Accuracy—Open water rating curve fairly well defined between gauge heights 91.5 and 94.5. The relation of gauge height to discharge during the log-driving period is affected by back water from log jams.

Observer—Ruby F. Smith, Mine Centre.

Discharge Measurements of Turtle River at Mountain Rapids in 1915

Date	Hydrographer	Width in Feet	Area of Section in Sq. Feet	Mean Velocity in Feet per Sec.	Gauge Height in Feet	Discharge in Sec-Feet	Discharge in Second-feet per Square Mile
Jan. 20....	Taylor, J. R....	156	2,446	.08	90.06	184 (a)	.....
Feb. 28....	"	156	2,346	.08	90.04	184 (a)	.....
Mar. 2....	"	119	894	.23	90.04	209 (b)	.....
" 30....	"	118	892	.27	90.01	244 (b)	.....
Apr. 7....	"	120	904	.28	90.13	248 (b)	.....
May 20....	"	169	2,966	.43	92.67	1,283	.....
June 26....	"	173	3,303	.78	94.70	2,592 (c)	.....
July 22....	"	172	3,205	.69	94.20	2,235	.....
" 29....	"	172	3,237	.72	94.17	2,322	.....
Aug. 7....	"	170	3,117	.56	93.35	1,747	.....
" 26....	"	166	2,897	.38	92.18	1,107	.....
Sept. 4....	"	166	2,848	.32	91.89	914	.....
" 4....	"	166	2,848	.32	91.89	895	.....
" 5....	"	165	2,829	.31	91.77	866	.....
" 5....	"	165	2,829	.32	91.77	912	.....
" 5....	"	165	2,815	.30	91.72	838	.....
" 6....	"	165	2,815	.30	91.66	850	.....
Sept. 30....	"	165	2,782	.22	91.45	604	.....
" 30....	"	165	2,782	.22	91.45	616	.....

(a) Ice measurement; river partly covered with ice below section; small log jam in Otter Falls.

(b) Measurement made 70 ft below regular section.

(c) Lumber companies driving on Little Turtle Lake and Turtle River; jam of logs in centre of river 70 feet below section. Otter Falls clear of logs.

Daily Gauge Height and Discharge of Turtle River at Mountain Rapids for 1914-5

Drainage Area, 1,760 Square Miles

Day	November			December			January			February			March			April			May			June			July			August			September			October									
	Gauge Ht.		Dis-charge	Gauge Ht.		Dis-charge	Gauge Ht.		Dis-charge	Gauge Ht.		Dis-charge	Gauge Ht.		Dis-charge	Gauge Ht.		Dis-charge	Gauge Ht.		Dis-charge	Gauge Ht.		Dis-charge	Gauge Ht.		Dis-charge	Gauge Ht.		Dis-charge	Gauge Ht.		Dis-charge										
	Feet	Sec.-ft.		Feet	Sec.-ft.		Feet	Sec.-ft.		Feet	Sec.-ft.		Feet	Sec.-ft.		Feet	Sec.-ft.		Feet	Sec.-ft.		Feet	Sec.-ft.		Feet	Sec.-ft.		Feet	Sec.-ft.		Feet	Sec.-ft.		Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.		
1	92.70	1355		91.49	847		90.14	184		90.01	180		90.04	198		89.97	242		91.85		890		93.06		1561		94.97		2847		93.83		2034		92.06		995		91.45		702		
2	92.60	1295		91.47	838		90.12	183		90.04	180		90.04	199		89.97	244		91.81		870		92.81		1411		94.85		2757		93.70		1950		92.01		970		91.47		711		
3	92.56	1271		91.47	824		90.12	182		90.04	180		90.01	199		89.97	246		91.77		850		92.89		1459		94.72		2660		93.64		1911		91.97		950		91.45		702		
4	92.62	1170		91.45	810		90.10	182		90.04	181		90.01	200		89.97	246		91.77		850		92.89		1459		94.66		2615		93.56		1861		91.89		910		91.47		711		
5	92.62	1162		91.45	792		90.08	182		90.06	182		90.01	202		90.01	247		91.72		825		92.99		1519		94.64		2600		93.51		1831		91.77		850		91.47		711		
6	92.47	1156		91.40	740		90.10	182		90.06	182		90.01	202		90.06	247		91.68		806		93.14		1609		94.56		2542		93.44		1789		91.66		797		91.47		711		
7	92.46	1150		91.32	682		90.10	182		90.06	183		89.99	203		90.06	247		91.83		870		93.22		1657		94.51		2507		93.37		1749		91.51		729		91.47		711		
8	92.38	1147		91.22	635		90.10	182		90.04	183		89.97	206		90.04	250		92.22		1081		93.22		1657		94.43		2451		93.30		1705		91.43		693		91.47		711		
9	92.31	1142		91.14	590		90.08	182		90.04	184		89.97	208		90.22	257		92.51		1241		93.14		1609		94.35		2395		93.22		1657		91.39		675		91.56		752		
10	92.29	1135		91.04	545		90.06	182		90.04	184		89.97	209		90.35	270		92.64		1319		93.12		1597		94.30		2360		93.04		1549		91.31		639		91.58		761		
11	92.21	1125		90.95	500		90.06	181		90.04	185		89.97	210		90.60	280		92.68		1343		93.18		1623		94.25		2325		93.04		1483		91.21		599		91.56		752		
12	92.13	1114		90.87	470		90.06	181		90.04	185		89.97	212		90.64	290		92.72		1367		93.35		1736		94.22		2304		92.93		1459		91.16		579		91.51		729		
13	92.10	1095		90.80	430		90.06	181		90.04	186		89.97	213		90.72	306		92.68		1343			1795		94.18		2276		92.89		1459		91.16		579		91.49		720		
14	92.06	1005		90.65	290		90.06	181		90.06	186		89.97	216		90.89	342		92.66		1331			1855		94.16		2262		92.77		1397		91.16		579		91.49		720		
15	92.00	980		90.59	240		90.06	181		90.06	188		89.99	218		91.06	354		92.60		1295			1915		94.14		2248		92.72		1367		91.10		555		91.49		720		
16	91.98	962		90.55	224		90.06	181		90.06	190		89.99	220		91.14	371		92.62		1307			1980		94.11		2227		92.64		1319		91.08		547		91.51		729		
17	91.97	947		90.55	214		90.06	182		90.06	192		89.97	220		91.24	411		92.64		1319			2045		94.04		2178		92.62		1307		91.04		531		91.49		720		
18	91.91	932		90.44	203		90.06	182		90.06	193		89.97	221		91.35	437		92.62		1307			2180		94.03		2171		92.49		1229		91.06		534		91.47		711		
19	91.84	923		90.40	199		90.06	182		90.06	195		89.97	222		91.39	475		92.64		1319			2250		94.12		2248		92.41		1185		91.06		534		91.45		702		
20	91.81	911		90.38	197		90.06	182		90.06	195		89.97	223		91.43	493		92.74		1379			2320		94.14		2248		92.39		1174		91.04		531		91.47		711		
21	91.81	911		90.38	197		90.06	182		90.06	195		89.97	223		91.43	493		92.74		1379			2320		94.14		2248		92.39		1174		91.04		531		91.47		711		
22	91.79	905		90.34	196		90.06	182		90.06	195		89.97	225		91.47	511		92.99		1519			2390		94.18		2276		92.34		1143		90.97		503		91.39		675		
23	91.74	900		90.31	194		90.06	182		90.06	195		89.97	228		91.47	531		93.16		1621			2460		94.27		2359		92.29		1119		90.95		495		91.35		657		
24	91.68	895		90.28	192		90.06	182		90.06	195		90.01	230		91.51	551		93.29		1699			2530		94.31		2367		92.22		1081		90.95		495		91.31		639		
25	91.66	888		90.27	190		90.06	182		90.06	195		90.01	232		91.62	579		93.27		1687			2615		94.31		2367		92.20		1070		91.14		571		91.35		657		
26	91.64	882		90.23	190		90.04	180		90.05	194		89.97	233		91.66	597		93.29		1699			94.81		2727		94.30		2360		92.18		1059		91.18		587		91.35		657
27	91.60	878		90.20	189		90.04	180		90.04	195		90.01	234		91.77	631		93.31		1711			94.81		2727		94.23		2311		92.14		1037		91.29		631		91.31		639
28	91.59	873		90.18	187		90.04	180		90.04	196		90.01	237		91.89	661		93.37		1747		.....		94.89		2787		94.18		2276		92.07		1020		91.31		639			
29	91.56	863		90.18	186		90.04	180		90.04	196		90.01	238		91.99	681		93.41		1767		.....		94.91		2802		94.14		2248		92.11		1020		91.31		639			
30	91.54	854		90.16	185		90.01	180		90.04	196		90.01	239		91.99	701		93.43		1783		.....		94.95		2832		94.01		2157		92.04		985		91.31		639			
31	.....	.....		90.14	184		90.01	180		90.04	196		90.01	240		91.99	721		93.29		1699		.....		93.89		2073		92.04		985		91.31		639		91.31		639		

NOTE.—Relation of gauge height to discharge affected by ice from Nov. 4th, 1914, to April 15th, 1915; discharges computed from discharge measurements and climatologic records.

Monthly Discharge of Turtle River at Mountain Rapids for 1914-5

Drainage Area 1,760 Square Miles

Month	Discharge in Second-feet			Discharge in Second-feet per Square Mile			Run-off
	Maximum	Minimum	Mean	Maximum	Minimum	Mean	Depth in Inches on Drainage Area
November (1914)	1,355	854	1,032	.77	.49	.59	.66
December ..	847	184	404	.48	.10	.23	.27
January .. (1915)	184	180	181	.10	.10	.10	.12
February	196	180	188	.11	.10	.11	.11
March	240	198	218	.14	.11	.12	.14
April	960	242	506	.55	.14	.29	.32
May	1,783	806	1,327	1.01	.46	.75	.86
June	2,832	1,411	2,041	1.61	.80	1.16	1.29
July	2,847	2,073	2,358	1.62	1.18	1.34	1.54
August	2,034	985	1,398	1.16	.56	.79	.91
September	995	495	658	.57	.28	.37	.41
October	761	639	699	.43	.36	.40	.46
The year	2,847	180	922	1.62	.10	.52	7.09

Wabigoon River near Quibell

Location—About 200 feet above the second fall from the G.T.P. Railway bridge, and $\frac{1}{2}$ mile below the bridge which spans the first fall. One mile east from Quibell Station, Township of Wabigoon, District of Kenora.

Records Available—Discharge measurements from June, 1914, to October, 1915. Daily gauge heights from August 1, 1914, to October 31, 1915.

Drainage Area—2,400 square miles.

Gauge—Vertical staff with enamelled face screwed to a 5-inch hewn spruce post firmly wedged and braced to the rock on the right bank of the river 1,200 feet above the metering station. The zero on the gauge (elev. 1,061.64) is referred to a bench mark (elev. 1,069.46, G.T.P. datum) painted on a point of rock just below the gauge. The initial point for soundings is a spike driven in the rock on the left bank.

Channel and Control—1,200 feet above the station the channel takes a sharp bend to the right, thence running comparatively straight to the station and falls. The water is sluggish above and moderately swift at the station. The banks are high, rocky and wooded. The bed of the stream is full of boulders and crevices. One channel exists at all stages.

Discharge Measurements—Made from canoe and ice with a small Price current meter.

Regulation—The Dryden Timber and Power Company operate a plant on the Wabigoon River at Dryden, which runs 24 hours per day with the exception of Sundays and holidays.

Winter Flow—Ice formation is very heavy here, and the winter flow is somewhat disturbed by it.

Accuracy—Rating curve fairly well defined, and estimates for open water flow are good. Open water rating curve applied for winter discharges as there are not sufficient records available to compute the winter flow.

Observer—D. C. Warner, Quibell.

Discharge Measurements of Wabigoon River near Quibell, in 1915

Date	Hydrographer	Width in Feet	Area of Section in Sq. Feet	Mean Velocity in Feet per Sec.	Gauge Height in Feet	Discharge in Sec-Feet	Discharge in Second-feet per Square Mile
Feb. 9....	Binns, P. V....	79	524	1.17	1,062.78	615(a)	.....
Mar. 26....	"	79	562	1.10	1,062.60	616(b)	.....
June 5....	"	90	868	2.70	1,065.64	2347	.....
July 28....	"	84	694	1.54	1,063.66	1071	.....
Sept. 21....	"	80	628	1.18	1,062.91	741	.....
Sept. 21....	"	80	628	1.16	1,062.91	729	.....

(a) Ice on rocks at head of rapids. Ice measurement

(b) Ice measurement. Ice 2 feet thick in vicinity of gauge. Ice along shores and on rocks in rapids.

Daily Gauge Height and Discharge of Wabigoon River near Quibell for 1914-5

Drainage Area, 2,400 Square Miles

Day	November			December			January			February			March			April			May			June			July			August			September			October		
	Gauge Ht.		Dis-charge	Gauge Ht.		Dis-charge	Gauge Ht.		Dis-charge	Gauge Ht.		Dis-charge	Gauge Ht.		Dis-charge	Gauge Ht.		Dis-charge	Gauge Ht.		Dis-charge	Gauge Ht.		Dis-charge	Gauge Ht.		Dis-charge	Gauge Ht.		Dis-charge	Gauge Ht.		Dis-charge			
	Feet	Sec-ft.		Feet	Sec-ft.		Feet	Sec-ft.		Feet	Sec-ft.		Feet	Sec-ft.		Feet	Sec-ft.		Feet	Sec-ft.		Feet	Sec-ft.		Feet	Sec-ft.		Feet	Sec-ft.		Feet	Sec-ft.		Feet	Sec-ft.	Feet
1	1063.43	963	1063.15	837	615	1062.96	755	1062.64	630	1062.60	615	1065.56	2300	1065.66	2375	1065.88	2540	1063.64	1065	1062.91	735	1063.97	1230													
2	1063.43	963	1063.14	833	615	1062.96	755	1062.72	660	1062.58	610	1065.23	2040	1065.73	2425	1065.89	2545	1063.56	1025	1062.91	735	1063.89	1190													
3	1063.43	963	1063.13	828	615	1062.96	755	1062.72	660	1062.60	610	1065.23	2040	1065.73	2425	1065.89	2545	1063.56	980	1062.89	725	1063.81	1150													
4	1063.43	963	1063.12	824	615	1062.96	755	1062.72	660	1062.62	620	1064.82	1750	1065.68	2390	1065.76	2450	1063.47	980	1062.87	720	1063.72	1105													
5	1063.43	963	1063.07	801	615	1062.96	755	1062.73	660	1062.65	635	1064.72	1685	1065.66	2375	1065.68	2390	1063.43	965	1062.85	710	1062.72	1105													
6	1063.40	950	1062.97	758	615	1062.96	755	1062.73	660	1062.76	635	1064.72	1685	1065.66	2375	1065.68	2390	1063.43	945	1062.79	685	1063.72	1105													
7	1063.39	945	1062.96	754	615	1062.93	740	1062.74	665	1063.14	835	1064.82	1750	1065.63	2350	1065.47	2230	1063.39	925	1062.76	675	1063.72	1105													
8	1063.32	914	1062.93	742	615	1062.89	725	1062.73	660	1063.60	1045	1065.43	2200	1065.60	2330	1065.46	2225	1063.31	910	1062.76	675	1063.70	1095													
9	1063.22	869	1062.89	726	615	1062.78	680	1062.73	660	1063.64	1065	1065.93	2580	1065.46	2225	1065.46	2225	1063.31	895	1062.76	675	1063.72	1105													
10	1063.18	851	1062.89	726	615	1062.81	695	1062.72	660	1063.91	1200	1066.18	2780	1065.06	1915	1064.74	1695	1063.26	885	1062.79	685	1063.72	1105													
11	1063.14	833	1062.89	726	615	1062.81	695	1062.76	675	1064.31	1425	1066.10	2715	1065.10	1915	1064.62	1620	1063.26	885	1062.76	675	1063.64	1025													
12	1063.13	828	1062.89	726	615	1062.80	690	1062.72	660	1064.22	1370	1065.98	2620	1064.40	1480	1064.47	1520	1063.26	880	1062.72	660	1063.56	1025													
13	1063.14	833	1062.89	726	615	1062.80	690	1062.72	660	1063.93	1210	1065.90	2555	1064.31	1425	1064.40	1480	1063.24	870	1062.64	630	1063.49	990													
14	1063.14	833	1062.89	726	615	1062.79	685	1062.72	660	1063.89	1190	1065.80	2480	1064.26	1395	1064.33	1440	1063.22	870	1062.64	630	1063.49	990													
15	1063.14	833	1062.89	726	615	1062.79	685	1062.72	660	1063.88	1185	1065.66	2375	1064.22	1370	1064.31	1425	1063.22	870	1062.72	660	1063.47	980													
16	1063.14	833	1062.89	726	615	1062.79	685	1062.72	660	1063.93	1210	1065.90	2555	1064.31	1425	1064.40	1480	1063.24	835	1062.74	665	1063.41	955													
17	1063.21	864	1062.97	760	615	1062.97	760	1062.76	675	1064.02	1260	1065.56	2300	1064.43	1500	1064.26	1395	1063.14	825	1062.72	660	1063.41	955													
18	1063.18	851	1062.96	755	615	1062.80	690	1062.72	660	1064.02	1260	1065.52	2270	1064.64	1650	1064.20	1360	1063.12	805	1062.74	665	1063.39	945													
19	1063.14	833	1062.96	755	615	1062.80	690	1062.64	630	1064.02	1260	1065.46	2225	1064.81	1740	1064.12	1315	1063.06	805	1062.74	665	1063.35	925													
20	1063.14	833	1062.97	760	615	1062.80	690	1062.64	630	1063.97	1255	1065.46	2225	1064.81	1740	1064.12	1315	1063.06	795	1062.76	675	1063.31	910													
21	1063.13	828	1062.97	760	615	1062.81	695	1062.64	630	1063.96	1230	1065.39	2170	1064.89	1800	1063.97	1230	1063.06	795	1062.95	750	1063.28	895													
22	1063.10	815	1062.97	760	615	1062.79	685	1062.64	630	1063.89	1190	1065.31	2110	1064.89	1800	1063.96	1230	1063.04	790	1063.08	805	1063.26	887													
23	1063.06	797	1062.96	755	615	1062.79	685	1062.65	635	1063.98	1240	1065.22	2035	1064.90	1805	1063.90	1195	1063.02	780	1063.28	895	1063.26	887													
24	1063.06	797	1062.97	760	615	1062.79	685	1062.65	635	1064.64	1630	1065.16	1990	1064.93	1825	1063.89	1190	1063.14	835	1063.33	920	1063.24	880													
25	1063.05	792	1062.97	760	615	1062.79	685	1062.65	635	1064.97	1855	1065.12	1965	1065.07	1915	1063.88	1185	1063.12	825	1063.49	990	1063.24	880													
26	1063.05	792	1062.97	760	615	1062.79	685	1062.65	635	1065.14	1980	1065.08	1930	1065.06	1915	1063.79	1140	1063.10	815	1063.85	1170	1063.24	880													
27	1063.05	792	1062.96	755	615	1062.79	685	1062.65	635	1065.62	2345	1065.06	1915	1065.10	1950	1063.72	1105	1063.06	795	1064.06	1285	1063.22	870													
28	1063.04	778	1062.96	755	615	1062.79	685	1062.65	635	1065.62	2345	1065.06	1915	1065.10	1950	1063.72	1105	1063.06	765	1064.08	1285	1063.22	870													
29	1063.04	778	1062.96	755	615	1062.79	685	1062.65	635	1065.65	2370	1065.52	2270	1065.56	2300	1063.66	1075	1062.99	765	1064.06	1285	1063.24	880													
30	1063.04	778	1062.96	755	615	1062.79	685	1062.65	635	1065.65	2370	1065.52	2270	1065.56	2300	1063.66	1075	1062.99	760	1064.04	1270	1063.28	895													
31	1063.04	778	1062.96	755	615	1062.79	685	1062.65	635	1065.65	2370	1065.52	2270	1065.56	2300	1063.66	1075	1062.99	835	1063.64	1065	1063.28	895													

Monthly Discharge of Wabigoon River near Quibell for 1914-5

Drainage Area, 2,400 Square Miles

Month	Discharge in Second-feet			Discharge in Second-feet per Square Mile			Run-off
	Maximum	Minimum	Mean	Maximum	Minimum	Mean	Depth in Inches on Drainage Area
November (1914)	963	778	856	.40	.32	.36	.40
December “	837	615	683	.35	.26	.28	.32
January ..(1915)	760	615	689	.32	.26	.29	.33
February	755	660	702	.31	.27	.29	.30
March.....	675	615	646	.28	.26	.27	.31
April.....	2,370	610	1,304	.99	.25	.54	.60
May	2,780	1,685	2,190	1.16	.70	.91	1.05
June.....	2,480	1,370	1,950	1.03	.57	.81	.90
July.....	2,545	1,065	1,592	1.06	.44	.66	.76
August	1,065	735	863	.44	.31	.36	.42
September	1,295	630	810	.54	.26	.34	.38
October.....	1,230	870	996	.51	.36	.42	.48
The year	2,780	610	1,108	1.16	.25	.46	6.25

Wabigoon River at Wabigoon Falls

Location—About 100 feet above Wabigoon Falls, the last fall on the river, and three miles from its junction with the English River, District of Kenora.

Records Available—Discharge measurements from June, 1914, to October, 1915. Daily gauge heights August 1, 1914, to October 31, 1915, interpolated from gauge read on Wabigoon River at Quibell.

Drainage Area—3,120 square miles.

Gauge—Vertical staff with enamelled face screwed to a 5-inch hewn spruce post firmly wedged and braced to the left bank about 200 feet above the metering section. The zero on the gauge (elev. 111.37) is referred to a bench mark (elev. 120.07), consisting of a nail driven in the head of a 4-inch tamarac stump two feet up-stream from the gauge. Another bench mark (elev. 118.51) is painted on a point of rock on the left bank 75 feet below the metering section. The initial point for soundings is on the right bank, the edge of a 5-inch blazed poplar tree, and marked I. P., S. 12° E.

Channel and Control—Straight for about $\frac{1}{2}$ mile above and 100 feet below the station to the falls. Both banks are high, rocky and wooded, and will not overflow. The bed of the stream is composed of rock, with a few boulders and weeds at the right bank. The current is sluggish at and above the station, but swift just above the falls.

Discharge Measurements—Made from canoe and ice with a small Price current meter.

Regulation—The Dryden Timber & Power Company operate a plant at Dryden, Ontario. The power is used for the mill and for lighting the town. This plant runs 24 hours per day with the exception of Sundays and holidays, when it runs 12 hours. Part of the flow is utilized for operating a saw mill on the opposite side of the river.

Accuracy—The station rating curve is fairly well defined, but as the gauge heights are estimated from records at Quibell the discharges can only be considered approximate.

Discharge Measurements of Wabigoon River at Wabigoon Falls in 1915

Date	Hydrographer	Width in Feet	Area of Section in Sq. Feet	Mean Velocity in Feet per Sec.	Gauge Height in Feet	Discharge in Sec-Feet	Discharge in Second-feet per Square Mile
Feb. 5....	Binns, P. V....	112	622	1.22	111.31	757(a)	.....
Mar. 13....	".....	113	643	1.13	111.24	728(b)	.....
May 27....	".....	246	3,437	0.70	113.95	2,421	.....
June 22....	Carmichael, R.M.	245	3,339	0.67	113.54	2,235	.....
July 19....	".....	244	3,290	0.60	113.37	1,980	.....
Sept. 11....	".....	215	2,864	0.36	111.54	1,022	.....
Oct. 22....	".....	237	3,026	0.39	112.29	1,168	.....

(a) Boat measurement 100 feet below regular section. Open water; ice at regular section too weak.

(b) On account of weak ice at regular section, measurement taken 300 feet below gauge at an open water section.

Daily Gauge Height and Discharge of Wabigoon River at Wabigoon Falls for 1914-5

Drainage Area, 3,120 Square Miles

Day	November		December		January		February		March		April		May		June		July		August		September		October	
	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge
	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.
1	1112.46	1350	1112.06	1085	.....	800	111.79	925	111.32	680	111.26	650	114.13	2625	114.17	2665	114.24	2725	112.72	1535	111.72	880	113.11	1805
2	1112.46	1350	1112.05	1080	.....	800	111.79	925	111.44	740	111.23	635	113.99	2500	114.19	2680	114.24	2725	112.63	1470	111.72	880	113.03	1750
3	1112.46	1350	1112.03	1070	.....	800	111.79	925	111.44	740	111.26	650	113.92	2445	114.18	2670	114.23	2715	112.51	1385	111.69	865	112.94	1690
4	1112.46	1350	1112.03	1070	.....	800	111.79	925	111.44	740	111.29	665	113.80	2350	114.18	2670	114.20	2690	112.51	1385	111.66	850	112.82	1605
5	1112.46	1350	111.95	1020	.....	800	111.79	925	111.45	745	111.33	685	113.75	2310	114.17	2665	114.17	2665	112.46	1350	111.64	840	112.82	1605
6	1112.42	1325	111.80	930	.....	800	111.79	925	111.47	755	111.50	770	113.74	2300	114.16	2655	114.13	2625	112.43	1330	111.58	810	112.85	1625
7	1112.40	1310	111.79	925	.....	800	111.75	900	111.47	755	112.04	1075	113.80	2350	114.15	2645	114.09	2590	112.40	1310	111.54	790	112.82	1605
8	1112.30	1240	111.75	900	.....	800	111.69	865	111.45	745	112.68	1505	114.08	2380	114.14	2635	114.03	2535	112.35	1275	111.50	770	112.82	1605
9	1112.17	1150	111.69	865	.....	800	111.52	780	111.45	745	112.72	1535	114.25	2735	114.09	2590	113.89	2420	112.29	1235	111.50	770	112.80	1590
10	1112.11	1115	111.69	865	.....	800	111.57	805	111.44	740	113.05	1765	114.34	2815	113.92	2445	113.75	2310	112.25	1205	111.54	790	112.82	1605
11	1112.05	1080	111.69	865	.....	800	111.57	805	111.50	740	113.45	2070	114.30	2780	113.64	2220	113.68	2255	112.22	1185	111.44	770	112.73	1540
12	1112.03	1070	111.69	865	.....	800	111.56	800	111.44	740	113.07	1780	114.24	2755	113.52	2125	113.57	2165	112.22	1185	111.44	740	112.63	1470
13	1112.05	1080	111.69	865	.....	800	111.56	800	111.44	740	113.03	1750	114.21	2700	113.40	2030	113.46	2080	112.17	1150	111.32	680	112.54	1410
14	1112.05	1080	111.69	865	.....	800	111.54	790	111.44	740	113.03	1750	114.21	2700	113.40	2030	113.46	2080	112.17	1150	111.32	680	112.54	1410
15	1112.05	1080	.....	800	.....	800	111.54	790	111.44	740	113.01	1733	114.17	2665	113.37	2005	113.44	2060	112.17	1150	111.44	740	112.51	1385
16	1112.05	1080	.....	800	.....	800	111.50	770	111.44	740	113.09	1795	114.13	2625	113.55	2150	113.40	2030	112.04	1075	111.47	755	112.43	1330
17	1112.12	1120	.....	800	.....	800	111.80	930	111.44	740	113.17	1850	114.11	2610	113.69	2260	113.37	2005	112.02	1060	111.44	740	112.43	1330
18	1112.11	1115	.....	800	.....	800	111.78	925	111.38	710	113.21	1880	114.10	2600	113.72	2285	113.30	1950	111.96	1025	111.47	755	112.40	1310
19	1112.05	1080	.....	800	.....	800	111.79	925	111.56	800	113.17	1850	114.09	2590	113.79	2340	113.27	1925	111.93	1025	111.47	740	112.35	1275
20	1112.05	1080	.....	800	.....	800	111.80	930	111.56	800	113.11	1805	114.09	2590	113.79	2340	113.19	1805	111.93	1025	111.50	770	112.29	1235
21	1112.03	1070	.....	800	.....	800	111.80	930	111.57	805	113.03	1700	114.06	2565	113.83	2375	113.11	1805	111.93	1010	111.78	820	112.25	1205
22	111.99	1045	.....	800	.....	800	111.54	790	111.32	680	113.03	1700	114.03	2535	113.83	2375	113.10	1800	111.90	990	111.96	1025	112.22	1185
23	111.93	1010	.....	800	.....	800	111.79	925	111.33	685	113.12	1815	113.99	2500	113.84	2380	113.03	1750	111.86	965	112.25	1205	112.22	1185
24	111.93	1010	.....	800	.....	800	111.80	930	111.54	790	113.69	2260	113.96	2480	113.85	2390	113.02	1745	112.04	1075	112.20	1170	112.20	1170
25	111.92	1000	.....	800	.....	800	111.80	930	111.50	770	113.68	2260	113.96	2470	113.88	2415	113.01	1735	111.93	1010	112.20	1170	112.20	1170
26	111.92	1000	.....	800	.....	800	111.80	930	111.43	735	113.96	2480	113.93	2455	113.92	2445	112.91	1665	111.99	1045	112.98	1715	112.20	1170
27	111.92	1000	.....	800	.....	800	111.79	925	111.43	735	114.15	2645	113.92	2445	113.94	2460	112.82	1605	111.93	1010	113.81	1880	112.17	1150
28	111.90	990	.....	800	.....	800	111.79	925	111.29	665	114.16	2655	114.03	2535	114.03	2555	112.72	1555	111.83	950	113.83	1895	112.20	1170
29	111.93	1010	.....	800	.....	800	111.79	925	111.26	650	114.17	2665	114.11	2610	114.13	2625	112.75	1555	111.83	950	113.21	1880	112.20	1170
30	111.90	990	.....	800	.....	800	111.79	925	111.29	660	114.16	2655	114.14	2635	114.21	2700	112.72	1555	111.80	930	113.19	1860	112.25	1205
31	.....	.....	.....	800	.....	800	111.79	925	111.26	650	.....	.....	114.16	2655	.....	.....	112.72	1555	111.72	880	.....	.....	112.25	1205

NOTE.—Gauge heights interpolated from those read at Quibell and discharges applied from Wabigoon Falls rating curve.

Monthly Discharge of Wabigoon River at Wabigoon Falls for 1914-5

Drainage Area, 3120 Square Miles

Month	Discharge in Second-feet			Discharge in Second-feet per Square Mile			Run-off
	Maximum	Minimum	Mean	Maximum	Minimum	Mean	Depth in Inches on Drainage Area
November (1914)	1,350	990	1,129	.56	.32	.36	.40
December "	1,085	800	867	.35	.26	.28	.32
January .. (1915)	930	800	866	.30	.26	.28	.32
February	927	735	823	.30	.24	.26	.27
March	755	650	709	.24	.21	.23	.27
April	2,665	635	1,719	.85	.20	.55	.61
May	2,815	2,310	2,565	.90	.74	.82	.95
June	2,700	2,030	2,428	.86	.66	.78	.87
July	2,725	1,535	2,088	.87	.49	.67	.77
August	1 535	880	1,139	.49	.28	.36	.42
September	1,895	680	1,019	.61	.22	.33	.37
October	1,805	1,150	1,392	.58	.37	.45	.52
The year	2,815	635	1,398	.90	.20	.45	6.09

Regular Stations

SOUTH-WESTERN ONTARIO DISTRICT

River	Location	Drain- age Area Sq. Miles	Township	County or District
Beaver	near Feversham	37	Osprey	Grey Co.....
"	near Kimberley	100	Euphrasia	"
Bighead	at Meaford	132	St. Vincent	"
Black	near Washago	585	Rama	Ontario Co.....
Credit	at Cataract Jct	85	Caledon	Peel Co.....
Maitland	at Ben Miller	950	Colborne	Huron Co
Mill Creek	near Redwing	49	Collingwood	Grey Co
Nottawasaga	near Nicolston	416	Essa	Simcoe Co
Rocky Saugeen.....	near Markdale	96	Glenelg	Grey Co
Saugeen	near Port Elgin	1,565	Saugeen	Bruce Co
"	near Walkerton	895	Brant	"
Sydenham	near Owen Sound	71	Derby	Grey Co.....
Thames, main stream	near Byron	1,270	Delaware	Middlesex Co
" north branch	near Fanshaw	650	London	"
" south branch	near Ealing	515	London and West- minster	"

Beaver River near Feversham

Location—At the highway bridge about 2 miles below the Village of Feversham, Township of Osprey, County of Grey.

Records Available—Discharges from Mar. 1, 1914, to Aug. 31, 1915. Monthly discharge measurements from September, 1915.

Drainage Area—37 square miles.

Gauge—Vertical steel staff with enamelled face, graduated in feet and inches, located on upstream side of left abutment of bridge.

Discharge—Discharges up to Aug. 31st, 1915, were determined from flow over the weir located under the bridge. After that date the weir was removed and measurements made by wading with a Price current meter.

Accuracy—On account of leakage through large holes underneath the weir, records at this station cannot be considered better than fair.

Discharge Measurements of Beaver River near Feversham in 1915

Date	Hydrographer	Width in Feet	Area of Section in Sq. Feet	Mean Velocity in Feet per Sec.	Gauge Height in Feet	Discharge in Sec-Feet	Discharge in Second-feet per Square Mile
Sept. 16....	Roberts, E.	19	14	1.71	0.75	24	.....
Oct. 20....	“	20	13	1.79	0.75	23	.....

Daily Gauge Height and Discharge of Beaver River near Feversham for 1914-5
Drainage Area, 37 Square Miles

	November		December		January		February		March		April		May		June		July		August		September		October	
	Gauge Ht.	Dis- charge Sec.-ft.	Gauge Ht.	Dis- charge Sec.-ft.	Gauge Ht.	Dis- charge Sec.-ft.	Gauge Ht.	Dis- charge Sec.-ft.	Gauge Ht.	Dis- charge Sec.-ft.	Gauge Ht.	Dis- charge Sec.-ft.	Gauge Ht.	Dis- charge Sec.-ft.	Gauge Ht.	Dis- charge Sec.-ft.	Gauge Ht.	Dis- charge Sec.-ft.	Gauge Ht.	Dis- charge Sec.-ft.	Gauge Ht.	Dis- charge Sec.-ft.	Gauge Ht.	Dis- charge Sec.-ft.
1	1.00	12	1.31	35	1.07	16	1.04	14	1.25	30	1.22	27	1.41	44	1.19	25	1.07	16	1.00	12				
2	.96	10	1.30	34	1.07	16	1.04	14	1.23	28	1.22	27	1.38	41	1.18	24	1.05	15	1.05	15				
3	.96	10	1.23	28	1.05	15	1.08	17	1.19	25	1.21	26	1.39	42	1.18	24	1.05	15	1.07	16				
4	.92	8	1.22	27	1.09	18	1.11	19	1.17	23	1.19	25	1.39	42	1.17	23	1.04	14	1.17	23				
5	1.04	14	1.21	26	1.09	18	1.07	16	1.17	23	1.23	28	1.33	36	1.14	21	1.19	25	1.11	19				
6	1.02	13	1.12	20	1.06	16	1.09	18	1.13	21	1.24	28	1.31	35	1.11	19	1.11	19	1.10	19				
7	.91	7	1.10	18	1.12	20	1.04	14	1.14	21	1.30	34	1.31	35	1.14	21	1.07	16	1.11	19				
8	.96	10	1.12	20	1.10	18	1.17	23	1.11	19	1.38	42	1.30	34	1.39	42	1.06	15	1.06	16				
9	1.03	14	1.10	18	1.08	17	1.08	17	1.12	20	1.69	73	1.29	33	1.21	26	1.06	16	1.09	18				
10	1.00	12	1.08	17	1.08	17	1.11	19	1.15	22	1.94	102	1.28	32	1.22	27	1.14	21	1.08	17				
11	1.00	12	1.09	18	1.11	19	1.10	19	1.15	22	2.19	133	1.27	31	1.30	34	1.12	20	1.06	16				
12	1.01	13	1.14	21	1.04	14	1.07	16	1.10	19	2.06	117	1.25	30	1.23	28	1.08	17	1.08	17				
13	1.02	13	1.02	13	1.04	14	1.08	17	1.10	19	1.75	80	1.25	30	1.17	23	1.08	17	1.05	15				
14	1.12	20	1.01	13	1.02	13	1.00	12	1.11	19	1.77	82	1.23	28	1.17	23	1.10	19	1.03	14				
15	1.10	18	1.09	18	1.04	14	1.08	17	1.16	23	1.70	71	1.23	28	1.44	46	1.08	17	1.02	13				
16	1.26	30	1.21	26	1.02	13	1.13	21	1.14	21	1.69	72	1.20	26	1.25	30	1.10	19	1.02	13				
17	1.19	25	1.26	30	1.02	13	1.08	17	1.12	20	1.67	70	1.23	28	1.21	26	1.03	14	1.03	14				
18	1.14	21	1.30	34	1.07	16	1.08	17	1.14	21	1.62	65	1.22	27	1.20	26	.96	10	1.01	13				
19	1.14	21	1.23	28	1.10	19	1.12	20	1.12	20	1.62	65	1.21	26	1.16	23	1.02	13	1.01	13				
20	1.05	10	1.10	18	1.08	17	1.04	14	1.14	21	1.58	60	1.20	26	1.15	22	.94	9	1.01	13				
21	1.12	20	1.23	28	1.08	17	1.08	17	1.08	17	1.54	56	1.22	27	1.18	24	1.11	19	.99	11				
22	1.10	18	1.19	25	1.08	17	1.06	16	1.08	17	1.52	54	1.23	28	1.16	23	1.02	13	.94	9				
23	1.02	13	1.23	28	1.21	26	1.25	30	1.10	19	1.48	51	1.20	26	1.16	23	1.01	13	1.00	12				
24	1.03	14	1.20	25	1.14	21	1.35	38	1.15	22	1.46	48	1.18	24	1.13	21	1.05	15	1.02	13				
25	.95	9	1.21	26	1.07	16	1.27	31	1.21	26	1.46	48	1.19	25	1.10	19	1.01	13	1.02	13				
26	.94	9	1.15	22	1.06	16	1.25	30	1.27	31	1.46	48	1.23	27	1.11	19	1.10	18	1.06	16				
27	1.27	31	1.05	15	1.08	17	1.21	26	1.27	31	1.44	46	1.23	28	1.10	19	1.10	18	1.00	12				
28	1.21	26	1.04	14	1.06	16	1.21	26	1.25	30	1.46	48	1.22	27	1.05	15	1.05	15	1.01	13				
29	1.19	25	1.08	17	1.08	17	1.21	26	1.30	34	1.42	45	1.21	26	1.07	16	1.18	24	1.00	12				
30	1.25	29	1.06	16	1.08	17	1.21	26	1.30	34	1.34	38	1.21	26	1.09	18	1.05	15	1.02	13				
31	1.00	12	1.08	17	1.04	14	1.21	26	1.24	28	1.34	38	1.20	26	1.09	18	1.09	18	.96	10				

Monthly Discharge of Beaver River near Feversham for 1914-5

Drainage Area 37 Square Miles

Month	Discharge in Second-feet			Discharge in Second-feet per Square Mile			Run-off
	Maximum	Minimum	Mean	Maximum	Minimum	Mean	Depth in Inches on Drainage Area
November (1914)	29	7	16	.78	.19	.43	.48
December "	35	13	22	.95	.35	.59	.68
January (1915)	26	13	17	.70	.35	.46	.53
February	38	14	20	1.03	.38	.54	.56
March	34	17	23	.92	.46	.62	.71
April	133	25	57	3.59	.68	1.54	1.72
May	44	24	30	1.19	.65	.81	.93
June	46	15	24	1.24	.41	.65	.73
July	25	9	16	.68	.24	.43	.50
August	23	9	14	.62	.24	.38	.44
The year	133	7	24	3.59	.19	.65	7.28

Beaver River near Kimberley

Location—At the bridge known as Hill's Bridge, about 2 miles above Kimberley, on the south half of lot 2, concession 5, Township of Euphrasia, County of Grey.

Records Available—Discharge measurements at Weber's Bridge September, 1914, to January, 1915. Discharge measurements and daily gauge heights April 25, 1915, to October 31, 1915, at Hill's Bridge.

Drainage Area—100 square miles.

Gauge—Vertical staff 0 to 6 feet on tree on left bank 20 feet downstream from bridge. Zero on gauge is 0.00.

Channel and Control—Channel straight above and below for a distance of 200 feet. The banks and control are permanent under ordinary conditions. The bed is composed of stones and gravel, one channel existing at all stages.

Discharge Measurements—Made from the bridge during the high-water period, and from a permanent wading section located 20 feet above the bridge for the low-water stages.

Regulation—The Hydro-Electric Power Commission's power plant located three-quarters of a mile upstream, though a twenty-four hour power, has a marked effect on the river stage at this section.

Accuracy—The rating curve is fairly well defined, but open-water estimates are subject to errors, due to fluctuations in stage caused by operation of power plant.

Observer—A. Hill, Kimberley P.O.

Discharge Measurements of Beaver River near Kimberley in 1915

Date	Hydrographer	Width in Feet	Area of Section in Sq. Feet	Mean Velocity in Feet per Sec.	Gauge Height in Feet	Discharge in Sec-Feet	Discharge in Second-feet per Square Mile
Jan. 27....	Murray, W. S. ..	35	32	1.54	4.50	49 (a)	.....
April 25....	Roberts, E	42	84	2.60	1.67	219	.....
May 19....	"	57	64	2.33	1.47	149	.....
" 19....	"	57	60	2.12	1.37	127	.....
June 7....	"	51	14	2.09	0.50	21	.....
" 23....	"	51	19	2.20	0.56	29	.....
July 11....	"	56	61	2.16	1.39	132	.....
" 21....	"	55	35	1.74	0.83	61	.....
Aug. 13....	"	55	33	2.03	0.81	67	.....
Sept. 16....	"	55	25	1.60	0.71	40	.....
Oct. 20....	"	56	36	1.76	0.89	63	.....

(a) Ice measurement at Weber's Bridge.

Monthly Discharge of Beaver River near Kimberley for 1914-5

Drainage Area, 100 Square Miles

Month	Discharge in Second-feet			Discharge in Second-feet per Square Mile.			Run-off
	Maximum	Minimum	Mean	Maximum	Minimum	Mean	Depth in Inches on Drainage Area
November (1914)							
December ..							
January .. (1915)							
February ..							
March ..							
April ..	194	66	120	1.94	.66	1.20	1.34
May ..	281	82	176	2.81	.82	1.76	2.03
June ..	55	19	29	.55	.19	.29	.32
July ..	140	21	60	1.40	.21	.60	.69
August ..	55	30	44	.55	.30	.44	.51
September ..	144	41	52	1.44	.41	.52	.58
October ..	84	37	58	.84	.37	.58	.67
The period ..	281	19	77	2.81	.19	.77	6.14

Bighead River at Meaford

Location—At the Georgian Bay Milling & Power Co. grist mill bridge outside of the Town of Meaford, near lot 15, concession 5, Township of St. Vincent, County of Grey.

Records Available—June 10 to October 31, 1915.

Drainage Area—132 square miles.

Gauge—Vertical staff 0 to 12 feet on right abutment. Elevation of zero on gauge is 0.00.

Channel and Control—The channel is straight for 100 feet above and 500 feet below the gauging station. The bed of the stream is composed of stones and gravel, and is shifting. During the freshet stage banks and control are not stationary.

Discharge Measurements—During the low-water period a permanent wading section is used 200 feet downstream. The bridge is used during the high stages.

Regulation—Low-water flow is controlled by the Georgian Bay Milling & Power Co.'s dam located four miles upstream. As the plant is usually run for 24 hours each day, except Sunday, the fluctuations will not be great.

Accuracy—The rating curve is not very accurately defined below gauge height 1.80 feet; at all other stages for which gauge height records are available the discharges are considered good.

Observer—Wilbert Baker, Meaford.

Discharge Measurements of Bighead River at Meaford in 1915

Date	Hydrographer	Width in Feet	Area of Section in Sq. Feet	Mean Velocity in Feet per Sec.	Gauge Height in Feet	Discharge in Sec-Feet	Discharge in Second-feet per Square Mile
June 10....	Roberts. E	31	33	1.93	2.00	63	.....
July 10....	"	29	27	1.40	1.81	38	.....
" 20....	"	31	32	1.82	1.86	58	.....
Aug. 11....	"	21	12	0.25	1.16	3 (a)	.....
Sept. 17....	"	31	27	1.48	1.83	40	.....
Oct. 20....	"	32	33	1.70	1.94	56	.....

(a) Dam above closed.

Monthly Discharge of Bighead River at Meaford for 1914-5

Drainage Area, 132 Square Miles

Month	Discharge in Second-feet			Discharge in Second-feet per Square Mile			Run-off
	Maximum	Minimum	Mean	Maximum	Minimum	Mean	Depth in Inches on Drainage Area
November (1914)							
December. "							
January.. (1915)							
February							
March							
April							
May							
June 10-30	92	41	59	.70	.31	.45	.35
July	63	32	44	.48	.24	.33	.38
August	99	17	51	.75	.13	.39	.45
September	201	36	57	1.52	.27	.43	.48
October	143	52	75	1.08	.39	.57	.66
The period..	201	17	57	1.52	.13	.43	2.32

Black River near Washago

Location—At the highway bridge known as Kennedy's Bridge, about 5 miles south-east of the Town of Washago, on lot 1, concession G, Township of Rama, County of Ontario.

Records Available—Discharge measurements at first bridge from August, 1913, to January, 1914. Discharge measurements at Kennedy's Bridge from February, 1914, and daily gauge heights from May 5 to October 31, 1915.

Drainage Area—585 square miles.

Gauge—Vertical staff 0 to 12 feet on tree on left bank. Elevation of zero is 19.00, which is referred to a B.M. (elevation 30.00) on tie rod on downstream side of bridge.

Channel and Control—Channel is straight for 150 feet above and 700 feet below the gauging section. The banks and control can be considered permanent, as the velocity here is never very high. The bed of the stream is composed of rock.

Discharge Measurements—Made from the bridge at all stages.

Winter Flow—Owing to the somewhat sluggish flow at this section, ice from December to March forms to a great thickness, and relation of gauge height to discharge is seriously affected during that period. Measurements are made to determine the winter flow.

Regulation—The flow at this section during May, June and July is controlled to a large extent by logging dams above. The operation of gates at these dams causes fluctuations in gauge heights amounting to several feet at the gauge. At times logs lodge below section, causing considerable backwater.

Accuracy—For three months in the early summer the river stage is subject to large fluctuations, and the accuracy of the discharge depends upon accuracy of mean daily gauge heights. Rating curve not well defined at all stages.

Observer—John Carrick, Washago.

Discharge Measurements of Black River near Washago in 1915

Date	Hydrographer	Width in Feet	Area of Section in Sq. Feet	Mean Velocity in Feet per Sec.	Gauge Height in Feet	Discharge in Sec-Feet	Discharge in Second-feet per Square Mile
Jan. 5....	Murray, W. S. .	95	395	0.94	22.05	374 (a)	.....
Feb. 9...	" ..	105	530	0.72	22.50	381 (a)	.....
Mar. 9....	Roberts, E.	100	571	1.13	23.65	626 (a)	.....
June 12....	"	120	641	1.10	22.80	707 (b)	.....
July 9....	"	119	469	0.62	21.50	293	.....
Aug. 11....	"	99	426	0.40	21.08	172	.....
Sept. 18....	"	100	422	0.39	21.06	166	.....
Oct. 16....	"	119	551	0.88	22.21	482	.....

(a) Ice measurement.

(b) Cordwood in river.

Monthly Discharge of Black River near Washago for 1914-5

Drainage Area, 585 Square Miles

Month	Discharge in Second-feet			Discharge in Second-feet per Square Mile			Run-off
	Maximum	Minimum	Mean	Maximum	Minimum	Mean	Depth in Inches on Drainage Area
November. (1914)	.....	.....	.....	.....	.....	.....	.....
December ..	.....	.....	.....	.....	.....	.....	.....
January .. (1915)	.....	.....	.....	.....	.....	.....	.....
February .....	.....	.....	.....	.....	.....	.....	.....
March .....	.....	.....	.....	.....	.....	.....	.....
April .....	.....	.....	.....	.....	.....	.....	.....
May 5-31.....	1,710	514	1,070	2.92	.88	1.83	1.84
June.....	764	290	539	1.31	.20	.92	1.03
July	351	57	180	.60	.10	.31	.36
August	242	42	148	.41	.07	.25	.29
September	574	50	156	.98	.09	.27	.30
October.....	782	295	471	1.34	.50	.81	.93
The period	1,710	42	414	2.92	.07	.71	4.75

Credit River at Cataract Junction

Location—About 500 feet opposite C.P.R. station at Cataract Junction, lot 14, concession 3, Township of Caledon, County of Peel.

Records Available—Discharge measurements from June, 1912. Daily gauge heights May 7 to October 31, 1915.

Drainage Area—85 square miles.

Gauge—Vertical staff 0 to 6 feet on tree located on right bank. Zero on gauge (elevation 8.00) is referred to a B.M. (elevation 10.00) painted on rock 100 feet downstream from metering section.

Channel and Control—The channel is straight for about 350 feet above and 300 feet below the section. The right bank is low, and overflows during high stages. The bed is composed of gravel, which is shifting during flood stages.

Discharge Measurements—Made at permanent wading section at all stages.

Winter Flow—The ice has but little effect at this section. The open channel curve can be used with a fair degree of accuracy.

Regulation—The dam at Erin, about four miles upstream, causes serious fluctuations in the river stage at this section. Semi-daily gauge readings will not give a representative mean.

Accuracy—A fairly well-defined rating curve has been established for this station. The accuracy of the records depends upon accuracy of the mean daily gauge heights.

Observer—Alfred Riches, Cataract Junction.

Discharge Measurements^a of Credit River at Cataract Junction in 1915

Date	Hydrographer	Width in Feet	Area of Section in Sq. Feet	Mean Velocity in Feet per Sec.	Gauge Height in Feet	Discharge in Sec-Feet	Discharge in Second-feet per Square Mile
Jan. 29....	Murray, W. S...	38	36	0.95	8.70	34 (a)	.....
Feb. 26....	Roberts, E.	50	62	1.58	9.23	99 (b)	.....
May 7....	" " " " " "	40	29	2.05	8.79	60	.....
" 7....	" " " " " "	40	27	1.59	8.72	43	.....
" 18....	" " " " " "	40	29	1.97	8.75	57	.....
" 18....	" " " " " "	40	28	1.94	8.74	54	.....
July 12....	" " " " " "	40	21	1.28	8.60	27	.....
Aug. 11....	" " " " " "	40	27	1.70	8.71	46	.....
" 27....	" " " " " "	40	27	1.70	8.71	46	.....
" 27....	" " " " " "	40	26	1.61	8.71	42	.....
Sept. 26....	" " " " " "	41	38	2.52	8.96	96	.....
" 26....	" " " " " "	41	38	2.39	8.96	91	.....
Oct. 13....	" " " " " "	40	23	1.35	8.60	31	.....
" 13....	" " " " " "	40	26	1.70	8.73	42	.....
" 13....	" " " " " "	40	25	1.60	8.73	40	.....
" 13....	" " " " " "	40	25	1.60	8.73	40	.....

(a) Ice measurement.

(b) Ice measurement at small-foot bridge below regular section; ice jam above.

Daily Gauge Height and Discharge of Credit River at Cataract Junction for 1914-5

Drainage Area 85 Square Miles

Day	November		December		January		February		March		April		May		June		July		August		September		October	
	November		December		January		February		March		April		May		June		July		August		September		October	
	Gauge Ht.	Dis- charge	Gauge Ht.	Dis- charge	Gauge Ht.	Dis- charge	Gauge Ht.	Dis- charge	Gauge Ht.	Dis- charge	Gauge Ht.	Dis- charge	Gauge Ht.	Dis- charge	Gauge Ht.	Dis- charge	Gauge Ht.	Dis- charge	Gauge Ht.	Dis- charge	Gauge Ht.	Dis- charge	Gauge Ht.	Dis- charge
	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.
1	8.62	32	8.52	22	8.56	25	8.73	47	8.67	38
2	8.58	27	8.54	24	8.58	27	8.70	42	8.96	93
3	8.54	24	8.54	24	8.82	64	8.62	32	8.58	27
4	8.54	24	8.55	24	9.03	109	8.64	34	9.00	102
5	8.56	25	8.62	32	9.03	109	8.58	27	8.78	56
6	8.58	27	8.62	32	8.98	97	8.75	51	8.84	68
7	8.75	51	8.60	29	8.58	27	8.92	84	8.93	87	8.79	58
8	8.78	56	8.69	41	8.69	41	8.79	58	8.88	76	8.74	49
9	8.85	70	8.67	38	8.67	38	8.64	34	8.83	66	8.72	46
10	8.74	49	8.60	29	8.55	28	8.68	47	8.75	51	8.73	47
11	8.69	41	8.60	29	8.59	28	8.73	47	8.71	44	8.72	46
12	8.69	41	8.54	24	8.60	29	9.02	106	8.68	39	8.72	46
13	8.87	74	8.59	28	8.64	34	8.83	66	9.08	120	8.69	41
14	8.79	58	8.61	30	8.71	44	8.83	66	9.34	179	8.74	49
15	8.71	44	8.64	34	8.58	27	8.80	60	8.96	93	8.71	44
16	8.71	44	8.68	39	8.57	26	8.86	72	8.83	66	8.71	44
17	8.67	38	8.58	27	8.55	24	8.67	38	8.87	74	8.73	47
18	8.67	38	8.58	27	8.54	24	8.58	27	8.83	66	8.71	44
19	8.64	34	8.57	26	8.71	44	8.62	32	8.75	51	8.72	46
20	8.64	34	8.57	26	8.71	44	8.62	32	8.75	51	8.72	46
21	8.69	41	8.61	30	8.74	49	8.58	27	8.71	44	8.71	44
22	8.67	38	8.56	25	8.62	32	8.63	33	8.63	33	8.72	46
23	8.67	38	8.56	25	8.62	32	8.55	24	8.68	39	8.68	39
24	8.67	38	8.55	24	8.60	29	8.59	28	8.67	38	8.69	41
25	8.62	32	8.50	20	8.59	28	8.70	42	8.79	58	8.72	46
26	8.58	27	8.47	18	8.60	29	8.68	39	8.76	53	8.69	41
27	8.58	27	8.47	18	8.60	29	8.64	34	8.95	91	8.65	35
28	8.58	27	8.57	26	8.62	32	8.60	29	8.78	56	8.69	41
29	8.56	25	8.56	25	8.60	29	8.58	27	8.74	49	8.67	38
30	8.58	27	8.54	24	8.58	27	9.02	106	8.71	44	8.69	41
31	8.61	30	.....	.....	8.55	24	8.81	62	.....	.....	8.60	29

Monthly Discharge of Credit River at Cataract Junction for 1914-5

Drainage Area, 85 Square Miles

Month	Discharge in Second-feet			Discharge in Second-feet per Square Mile			Run-off
	Maximum	Minimum	Mean	Maximum	Minimum	Mean	Depth in Inches on Drainage Area
November (1914)	.....	.....	.....	.....	.....	.....	.....
December . . . . .	.....	.....	.....	.....	.....	.....	.....
January .. (1915)	.....	.....	.....	.....	.....	.....	.....
February .....	.....	.....	.....	.....	.....	.....	.....
March .....	.....	.....	.....	.....	.....	.....	.....
April .....	.....	.....	.....	.....	.....	.....	.....
May 7-31.....	74	25	41	.87	.29	.48	.45
June.....	41	18	28	.48	.21	.33	.37
July	49	22	30	.58	.26	.35	.40
August	109	24	53	1.28	.28	.62	.71
September	179	27	60	2.11	.32	.71	.79
October	102	29	47	1.20	.34	.55	.63
The period.....	179	18	43	2.11	.21	.51	3.65

Maitland River at Ben Miller

Location—At the highway bridge known as the Ben Miller Bridge, in the Village of Ben Miller, five miles south-west of the Town of Goderich, Township of Colborne, County of Huron.

Records Available—May, 1911, to October 31, 1915.

Drainage Area—950 square miles.

Gauge—Vertical steel staff gauge with enamelled face graduated in feet and inches and located on the downstream side of the first pier from the left abutment. The zero on the gauge (elev. 12.00) is referred to a bench mark (elev. 29.07) painted on the downstream side of the right wing wall.

Channel and Control—Channel is straight for 300 feet above and $\frac{1}{4}$ mile below the section. Both banks are low, clean and liable to overflow at high stages. The control is permanent during all stages, being composed of limestone.

Discharge Measurements—Made from the bridge at ordinary and high stages, and at a permanent wading section during the low water period.

Winter Flow—Ice greatly affects relation of gauge height to discharge. The section being wide and shallow, ice frequently freezes to the bottom, rendering meter measurements impossible.

Accuracy—For the low water a well-defined rating course has been established.

Observer—E. Pfrimmer, Ben Miller P.O.

Discharge Measurement of Maitland River at Ben Miller in 1915

Date	Hydrographer	Width in Feet	Area of Section in Sq. Feet	Mean Velocity in Feet per Sec.	Gauge Height in Feet	Discharge in Sec-Feet	Discharge in Second-feet per Square Mile
Feb. 5....	Murray, W. S..	360	877	2.24	14.79	1,969 (a)	.....

(a) Ice measurement. slush on ice.

Daily Gauge Height and Discharge of Maitland River at Ben Miller for 1914-5

Drainage Area, 950 Square Miles

Date	November			December			January			February			March			April			May			June			July			August			September			October		
	Gauge Ht.		Dis-charge	Gauge Ht.		Dis-charge	Gauge Ht.		Dis-charge	Gauge Ht.		Dis-charge	Gauge Ht.		Dis-charge	Gauge Ht.		Dis-charge	Gauge Ht.		Dis-charge	Gauge Ht.		Dis-charge	Gauge Ht.		Dis-charge	Gauge Ht.		Dis-charge	Gauge Ht.		Dis-charge	Gauge Ht.		Dis-charge
	Feet	Sec-ft.		Feet	Sec-ft.		Feet	Sec-ft.		Feet	Sec-ft.		Feet	Sec-ft.		Feet	Sec-ft.		Feet	Sec-ft.		Feet	Sec-ft.		Feet	Sec-ft.		Feet	Sec-ft.		Feet	Sec-ft.		Feet	Sec-ft.	
1	13.31	145		14.35	1330		14.34	985		14.63	1320		15.00	2875		14.21	1103		13.54	275		13.33	153		13.25	125		13.42	197		13.75	462		14.33	1292	
2	13.31	145		14.48	1590		14.54	985		14.67	1400		14.67	2031		14.12	953		13.50	245		13.29	137		13.17	104		13.37	172		13.71	420		14.33	1292	
3	13.38	175		14.44	1505		14.54	985		14.72	1495		14.42	1495		14.08	890		13.50	245		13.27	131		13.17	104		13.44	209		13.67	383		14.33	1292	
4	13.42	195		14.33	1290		14.34	985		14.72	1495		14.33	1322		14.17	1035		13.52	260		13.33	153		13.25	125		13.58	305		13.62	383		14.33	1292	
5	13.48	235		14.25	1155		14.34	985		14.79	1635		14.25	1175		14.27	1211		13.62	338		13.29	137		13.25	125		13.83	551		13.58	305		14.37	1398	
6	13.50	245		14.17	1030		14.34	985		14.79	1635		14.25	1175		14.42	1495		13.62	338		13.25	125		13.25	125		13.87	599		13.50	245		14.46	1575	
7	13.46	220		13.96	725		14.34	985		14.83	1940		14.17	1035		14.58	1827		13.67	383		13.33	153		13.25	125		13.87	599		13.50	245		14.50	1655	
8	13.42	195		13.81	535		14.34	985		14.87	2030		14.08	890		14.79	2220		13.83	551		13.33	153		13.25	125		13.83	551		13.58	305		14.46	1575	
9	13.42	195		13.83	560		14.37	1035		14.92	2150		14.08	890		14.92	2059		13.83	551		13.33	153		13.25	125		13.75	462		13.67	383		14.46	1575	
10	13.46	220		13.92	665		14.63	1415		15.00	2345		14.00	770		15.17	3351		13.83	551		13.31	144		13.25	125		13.75	462		13.67	383		14.46	1575	
11	13.46	220		14.00	780		14.80	1655		15.04	2450		14.08	890		15.33	3802		13.79	504		13.31	144		13.25	125		13.67	383		13.67	383		14.50	1655	
12	13.42	195		13.83	560		14.80	1655		15.04	2450		14.08	890		15.38	3947		13.75	462		13.31	144		13.23	119		14.17	1035		13.87	599		14.33	1292	
13	13.50	245		13.80	524		14.76	1575		15.25	3015		14.08	890		15.08	3069		13.67	383		13.31	144		13.23	119		14.33	1292		15.50	4305		14.12	553	
14	13.62	345		13.78	500		14.76	1575		15.50	3715		14.23	1139		14.79	2320		13.60	320		13.31	144		13.23	119		14.50	1655		15.08	4553		14.08	890	
15	13.58	314		13.78	500		14.72	1495		15.57	3920		14.54	1741		14.58	1827		13.52	290		13.37	172		13.23	119		14.42	1495		15.42	4099		14.17	1035	
16	14.12	960		13.80	524		14.72	1495		15.50	3715		15.17	3551		14.21	1103		13.50	245		13.46	221		13.23	119		14.08	890		14.67	2031		14.17	1035	
17	14.17	1030		13.80	524		14.72	1495		15.50	3715		14.58	1827		13.92	662		13.50	245		13.42	197		13.25	125		13.71	420		14.17	1035		13.92	662	
18	13.92	670		13.84	570		14.72	1495		15.50	3715		14.79	2320		14.12	953		13.48	321		13.42	197		13.25	125		13.77	483		14.25	1175		13.96	706	
19	13.88	618		14.13	845		14.67	1210		15.50	3715		14.71	2125		14.08	890		13.46	321		13.42	197		13.25	125		13.71	420		14.17	1035		13.92	662	
20	13.92	670		14.09	830		14.72	1495		15.50	3715		14.58	1827		13.92	662		13.50	245		13.42	197		13.25	125		13.71	420		14.17	1035		13.92	662	
21	13.81	535		14.17	875		14.67	1210		15.50	3715		14.71	2125		14.08	890		13.46	321		13.42	197		13.25	125		13.71	420		14.17	1035		13.92	662	
22	13.81	535		14.17	875		14.67	1210		15.50	3715		14.71	2125		14.08	890		13.46	321		13.42	197		13.25	125		13.71	420		14.17	1035		13.92	662	
23	13.81	535		14.13	743		14.63	1140		16.00	5925		14.46	1575		13.79	504		13.48	233		13.33	153		13.21	113		13.67	383		14.08	890		13.92	662	
24	13.83	560		14.13	743		14.63	1140		16.00	5925		14.46	1575		13.79	504		13.48	233		13.33	153		13.21	113		13.67	383		14.08	890		13.92	662	
25	14.00	780		14.17	800		14.63	1140		16.00	5925		14.96	2767		13.71	420		13.44	209		13.21	113		13.17	104		14.00	770		14.00	770		13.83	551	
26	14.15	995		14.22	875		14.63	1140		15.83	5364		14.88	2553		13.67	383		13.48	233		13.17	108		13.21	113		14.23	2039		14.92	2659		13.79	504	
27	14.42	1465		14.22	875		14.63	1140		15.67	4859		14.79	2320		13.62	388		13.42	197		13.17	104		13.21	113		14.75	2222		14.75	2222		13.75	462	
28	14.50	1530		14.22	875		14.59	1070		15.33	3802		14.61	2031		13.58	305		13.42	197		13.17	104		13.39	180		14.50	1655		14.78	2296		13.75	462	
29	14.42	1465		14.30	1000		14.59	1070		15.33	3802		14.54	1741		13.58	305		13.39	180		13.17	104		13.42	197		14.33	1292		14.50	1655		13.71	420	
30	14.29	1220		14.30	1000		14.59	1070		15.33	3802		14.38	1417		13.54	275		13.37	172		13.17	104		13.42	197		14.08	890		14.42	1495		13.71	420	
31	.....	.....		14.30	1000		14.59	1070		15.33	3802		14.25	1175		13.54	275		13.37	172		13.17	104		13.42	197		13.87	599		.....	.....		13.71	420	

NOTE.—Relation of gauge height to discharge affected by ice from Dec 18th, 1914, to Feb. 22nd, 1915; discharge for the period estimated from discharge measurements, observer's notes and climatologic records.

Monthly Discharge of Maitland River at Ben Miller for 1914-5

Drainage Area 950 Square Miles

Month	Discharge in Second-feet.			Discharge in Second-feet per Square Mile.			Run-off
	Maximum	Minimum	Mean	Maximum	Minimum	Mean	Depth in Inches on Drainage Area
November (1914)	1,530	145	562	1.61	.15	5.92	.65
December.	1,590	500	845	1.67	.53	.89	1.03
January ..(1915)	1,655	985	1,222	1.74	1.04	1.29	1.49
February	5,925	1,320	3,230	6.24	1.38	3.40	3.54
March	3,351	770	1,701	3.53	.81	1.79	2.06
April	3,947	275	1,384	4.15	.29	1.46	1.63
May	551	153	297	.58	.16	.31	.36
June	221	104	151	.23	.11	.16	.18
July	197	104	131	.21	.11	.14	.16
August	2,222	172	840	2.34	.18	.87	1.00
September	4,553	245	1,335	4.79	.26	1.41	1.57
October	1,655	420	987	1.74	.44	1.04	1.20
The year.....	5,925	104	1,041	6.24	.11	1.10	14.87

Mill Creek near Red Wing

Location—At the highway bridge near the Village of Red Wing near lot 16, concession 10, Township of Collingwood, County of Grey.

Records Available—July 20, 1915, to October 31, 1915, when station was discontinued.

Drainage Area—49 square miles.

Gauge—Vertical staff 0 to 3 feet on right abutment of bridge, upstream side. Zero on gauge is 0.00.

Channel and Control—The channel is straight for about 300 feet above and below the section. Both banks are high, and do not overflow. The bed is composed of gravel.

Discharge Measurements—Made from a wading section 100 feet above bridge.

Regulation—The dam at Red Wing has a 24-hour storage, and as the stream is small and the mill in use only a few hours each day serious fluctuations occur in the river stage at the section.

Accuracy—There are not sufficient records available to define the rating curve at all stages, and therefore discharges are approximate only.

Observer—Geo. White, Red Wing P.O.

Discharge Measurements of Mill Creek near Redwing in 1915

Date	Hydrographer	Width in Feet	Area of Section in Sq. Feet	Mean Velocity in Feet per Sec.	Gauge Height in Feet	Discharge in Sec-Feet	Discharge in Second-feet per Square Mile
July 20....	Roberts, E.	30	9	.73	0.81	7	.....
Aug. 13....	"	31	12	1.75	1.06	21	.....
Sept. 16....	"	32	13	1.30	1.00	17	.....

Monthly Discharge of Mill Creek near Redwing for 1914-5

Drainage Area, 49 Square Miles

Month	Discharge in Second-feet			Discharge in Second-feet per Square Mile			Run-off
	Maximum	Minimum	Mean	Maximum	Minimum	Mean	Depth in Inches on Drainage Area
November (1914)	.....	.....	.....	.....	.....	.....	.....
December "	.....	.....	.....	.....	.....	.....	.....
January .. (1915)	.....	.....	.....	.....	.....	.....	.....
February .....	.....	.....	.....	.....	.....	.....	.....
March.....	.....	.....	.....	.....	.....	.....	.....
April .....	.....	.....	.....	.....	.....	.....	.....
May .....	.....	.....	.....	.....	.....	.....	.....
June .....	.....	.....	.....	.....	.....	.....	.....
July 20-31.....	13	7	10	.27	.14	.20	.08
August	34	2	11	.71	.05	.22	.25
September.....	60	5	25	1.22	.10	.51	.57
October	42	25	34	.86	.51	.69	.80
The period.....	60	2	22	1.22	.05	.45	1.70

Nottawasaga River near Nicolston

Location—At McLean's bridge, 4 miles north of the Town of Nicholston, near lot 5, concession 6, Township of Essa, County of Simcoe.

Records Available—Discharge measurements from June, 1912. Daily gauge heights August 18, 1914, to October 31, 1915.

Drainage Area—416 square miles.

Gauge—Vertical staff 0 to 12 feet on right abutment, upstream side. Zero on the gauge (elevation 4.00) is referred to B.M. (elevation 20.00) on tension rod of bridge 60 feet from initial point for soundings.

Channel and Control—The channel below the section is straight for about 600 feet. Above the section it is straight for about 100 feet, when it takes a sharp turn to the right, causing a severe angle at the bridge. Both banks and control are subject to change under high-water conditions.

Discharge Measurements—Made from the bridge at all stages.

Winter Flow—The relation of gauge height to discharge is affected by ice during the winter months, and measurements are made to compute the winter flow.

Regulation—The dams above have no effect on this section.

Accuracy—These records, with the reduction made for the angle at section, can be considered good up to discharges of 800 second feet. There are not sufficient records available to compute discharges very accurately above gauge height 8.00 feet. The estimate made is probably close to the actual discharge.

Observer—John Scott, Egbert P.O.

Discharge Measurements of Nottawasaga River near Nicolston in 1915

Date	Hydrographer	Width in Feet	Area of Section in Sq. Feet	Mean Velocity in Feet per Sec.	Gauge Height in Feet	Discharge in Sec-Feet	Discharge in Second-feet per Square Mile
Jan. 20....	Murray, W. S...	85	238	0.92	6.29	219 (a)	.....
Feb. 19....	"	80	295	1.03	7.17	305 (a)	.....
Mar. 18....	"	90	533	1.26	8.96	670 (a)	.....
April 26....	Roberts, E....	90	462	1.26	7.71	584	.....
May 20....	"	85	300	0.60	5.81	179	.....
June 6....	"	80	254	0.50	5.30	126	.....
July 17....	"	70	272	0.59	5.80	163	.....
Aug. 25....	"	90	272	0.49	5.80	132	.....
" 26....	"	90	272	0.51	5.79	139	.....
Sept. 5....	"	90	244	0.39	5.48	96	.....
" 5....	"	90	244	0.41	5.49	98	.....
Oct. 7....	"	90	327	0.76	6.39	249	.....

(a) Ice measurement.

Daily Gauge Height and Discharge of Nottawasaga River near Nicolson for 1914-5

Drainage Area, 416 Square Miles

Date	November		December		January		February		March		April		May		June		July		August		September		October	
	Gauge Ht.		Gauge Ht.		Gauge Ht.		Gauge Ht.		Gauge Ht.		Gauge Ht.		Gauge Ht.		Gauge Ht.		Gauge Ht.		Gauge Ht.		Gauge Ht.		Gauge Ht.	
	Feet	Sec-ft.	Feet	Sec-ft.	Feet	Sec-ft.	Feet	Sec-ft.	Feet	Sec-ft.	Feet	Sec-ft.	Feet	Sec-ft.	Feet	Sec-ft.	Feet	Sec-ft.	Feet	Sec-ft.	Feet	Sec-ft.	Feet	Sec-ft.
1	5.92	174	6.63	316	5.84	138	6.38	206	8.59	632	8.29	717	6.48	286	5.48	97	5.25	65	5.46	94	5.85	160	5.87	164
2	6.05	200	6.98	386	6.09	190	6.25	180	8.46	600	8.13	669	6.54	298	5.50	100	5.42	88	5.56	109	5.62	118	7.21	437
3	6.00	190	7.13	417	5.92	160	6.48	206	8.34	570	7.71	562	6.36	262	5.48	97	5.79	148	6.06	202	5.60	115	8.06	650
4	5.98	186	6.88	366	6.17	204	6.50	210	8.09	507	7.79	582	6.17	224	5.31	71	5.65	122	8.98	924	5.56	109	7.21	437
5	6.09	208	6.46	219	6.19	208	6.38	186	7.75	422	8.50	780	6.11	212	5.42	88	5.75	140	8.92	906	5.48	97	6.94	380
6	6.05	209	6.13	216	5.92	154	6.38	186	7.64	308	8.59	807	6.13	216	5.31	71	6.00	190	7.52	515	5.54	106	6.48	286
7	6.09	208	6.09	208	6.00	170	6.46	202	7.54	378	8.71	843	6.02	194	5.33	74	5.77	144	7.08	406	6.10	210	6.39	268
8	6.00	190	5.86	162	6.29	218	6.75	260	7.46	362	9.42	1062	6.56	302	5.60	115	5.81	152	6.98	390	6.35	260	6.33	256
9	6.13	216	6.21	222	6.17	194	6.54	218	7.04	278	9.71	1163	6.98	390	5.83	156	5.96	182	6.73	336	6.17	224	6.17	224
10	5.94	178	6.09	198	6.13	186	6.38	166	7.34	338	9.79	1194	7.02	394	5.75	140	5.79	148	6.48	286	5.89	168	6.10	210
11	6.09	208	5.98	176	6.09	178	6.79	248	7.34	338	10.25	1352	6.73	336	5.62	118	5.54	106	6.17	224	5.79	148	6.10	210
12	6.05	200	6.05	190	6.23	206	6.63	216	7.17	304	10.09	1295	6.34	258	5.46	94	5.50	100	6.08	206	5.69	128	5.87	164
13	6.40	270	5.82	144	6.31	222	6.63	216	7.09	288	10.05	1282	6.63	316	5.46	94	5.83	156	6.98	390	6.89	368	5.92	174
14	6.88	366	6.05	190	6.29	218	6.59	208	7.25	320	9.05	945	6.59	308	5.71	132	6.29	248	6.98	390	8.02	640	6.00	190
15	6.50	270	5.92	164	6.13	186	6.96	282	7.67	404	7.84	595	6.19	228	5.83	156	5.98	186	6.71	332	7.12	415	6.37	264
16	7.23	442	6.03	186	6.09	178	6.84	258	7.17	304	7.50	510	5.90	170	6.33	256	5.75	140	6.27	244	6.33	256	6.39	268
17	7.50	510	5.84	148	6.09	178	7.09	308	8.75	675	7.59	532	6.04	198	5.89	168	6.29	248	6.04	198	6.42	274	6.17	224
18	6.46	282	5.88	156	6.25	200	6.88	266	9.00	750	7.09	408	6.17	224	5.73	136	6.12	214	5.96	182	6.98	390	6.14	218
19	6.67	324	6.00	180	6.44	238	6.71	212	8.79	687	6.92	375	5.96	182	5.64	121	5.98	186	5.69	128	6.73	336	6.21	232
20	6.09	208	5.63	112	6.25	200	6.96	262	9.05	795	6.84	358	5.75	140	5.60	115	6.37	264	5.79	148	6.27	244	6.23	236
21	5.84	158	6.00	180	6.67	284	6.71	212	9.50	960	6.79	348	5.81	152	5.60	115	6.08	206	5.73	136	6.06	202	6.10	228
22	5.92	174	5.84	148	6.09	168	7.00	270	9.92	1132	6.84	358	6.08	206	5.56	109	6.02	194	5.69	128	5.94	178	6.19	210
23	6.34	258	6.09	198	6.00	150	6.96	262	10.50	1370	6.29	248	5.92	174	5.50	100	6.04	198	5.94	178	5.85	160	6.04	198
24	6.09	208	5.88	156	6.21	192	7.50	370	11.46	1804	6.29	241	5.86	162	5.50	100	5.46	94	5.81	152	5.81	152	5.87	164
25	6.05	200	5.75	122	6.52	234	9.00	750	12.85	2360	6.21	232	5.81	152	5.50	100	5.33	74	5.85	160	5.69	128	5.94	178
26	6.38	266	6.34	238	6.46	222	8.79	687	12.46	2204	8.00	635	5.86	162	4.35	77	5.75	140	5.81	152	5.79	148	5.94	178
27	6.61	312	5.84	138	6.46	220	8.84	702	11.25	1720	6.80	350	5.75	140	5.29	69	5.75	140	5.69	128	6.94	380	5.96	182
28	7.09	408	5.96	162	6.40	210	8.71	663	10.25	1352	6.73	336	5.77	144	5.35	77	5.71	132	5.69	128	7.02	394	5.94	178
29	6.17	224	6.21	212	6.40	210	.....	.....	9.00	930	6.65	320	5.71	132	5.39	83	5.79	148	5.60	115	6.62	314	5.87	164
30	6.67	324	6.09	190	6.13	156	.....	.....	8.50	780	6.34	258	5.56	109	5.31	71	5.73	136	5.77	144	6.02	194	6.06	202
31	.....	.....	6.09	190	6.25	180	.....	.....	8.29	717	.....	.....	5.60	115	.....	.....	5.54	106	5.98	186	.....	.....	5.81	152

NOTE.—Relation of gauge height to discharge affected by ice from Dec. 9th, 1914, to March 23rd, 1915; discharges for the period computed from climatology records, discharge measurements and observer's notes.

Monthly Discharge of Nottawasaga River near Nicolston for 1914-5

Drainage Area 416 Square Miles

Month	Discharge in Second-feet			Discharge in Second-feet per Square Mile			Run-off
	Maximum	Minimum	Mean	Maximum	Minimum	Mean	Depth in Inches on Drainage Area
November (1914)	510	158	252	1.23	.38	.61	.68
December "	417	112	205	1.00	.27	.49	.56
January. (1915)	284	138	195	.68	.33	.47	.54
February	750	166	300	1.80	.40	.72	.75
March	2,360	278	793	5.67	.67	1.91	2.20
April	1,352	232	645	3.25	.56	1.55	1.73
May	394	109	219	.95	.27	.53	.61
June	256	69	110	.62	.17	.26	.29
July	264	65	155	.63	.15	.37	.43
August	924	94	265	2.22	.23	.64	.74
September	640	97	234	1.54	.23	.56	.62
October	650	152	243	1.56	.37	.58	.67
The year	2,360	65	301	5.67	.16	.72	9.82

Rocky Saugeen River near Markdale

Location—At the highway bridge known as Glen-Cross Bridge, three-quarters of a mile above Hayward's Falls, near lot 5, concession 8, Township of Glenelg, County of Grey.

Records Available—Discharge measurements and daily gauge heights June 8 to October 31, 1915.

Drainage Area—96 square miles.

Gauge—Vertical staff 0 to 6 feet on the downstream side of the centre pier of bridge. The zero of gauge (elevation 0.00) is referred to a B.M. (elevation 29.65) painted on a rock projecting from bank 40 feet north from first telephone pole on left bank.

Channel and Control—The channel is straight for 200 feet above and 500 feet below the station. The bed and banks are permanent, as flood conditions do not exist on this stream.

Discharge Measurements—Made at a permanent wading section. When the river is extremely high measurements will be made from the bridge.

Winter Flow—Ice is not expected to have a serious effect at this section.

Regulation—The dam above has no effect on the river stage at this section.

Accuracy—The rating curve is well defined between the stages for which gauge height records are available.

Observer—Arthur McNally, Markdale.

Discharge Measurements of Rocky Saugeen River near Markdale in 1915

Date	Hydrographer	Width in Feet	Area of Section in Sq. Feet	Mean Velocity in Feet per Sec.	Gauge Height in Feet	Discharge in Sec-Feet	Discharge in Second-feet per Square Mile
June 8....	Roberts, E.	39	40	2.38	1.44	95 (a)	.....
July 11....	"	65	72	0.73	1.23	55 (b)	.....
Aug. 12....	"	70	80	1.00	1.38	81 (c)	.....
Sept. 17....	"	77	105	1.12	1.76	118	.....
Oct. 20....	"	75	76	0.87	1.36	66	.....

- (a) Bridge section.
- (b) Bridge 20 ft. below section under repair; debris at gauge.
- (c) Measurement taken near present wading section.

Daily Gauge Height and Discharge of Rocky Saugeen River near Markdale for 1914-5

Drainage Area, 96 Square Miles

Day	November		December		January		February		March		April		May		June		July		August		September		October	
	November		December		January		February		March		April		May		June		July		August		September		October	
	Gauge Ht.	Dis- charge	Gauge Ht.	Dis- charge	Gauge Ht.	Dis- charge	Gauge Ht.	Dis- charge	Gauge Ht.	Dis- charge	Gauge Ht.	Dis- charge	Gauge Ht.	Dis- charge	Gauge Ht.	Dis- charge	Gauge Ht.	Dis- charge	Gauge Ht.	Dis- charge	Gauge Ht.	Dis- charge	Gauge Ht.	Dis- charge
	Feet	Sec-ft.	Feet	Sec-ft.	Feet	Sec-ft.	Feet	Sec-ft.	Feet	Sec-ft.	Feet	Sec-ft.	Feet	Sec-ft.	Feet	Sec-ft.	Feet	Sec-ft.	Feet	Sec-ft.	Feet	Sec-ft.	Feet	Sec-ft.
1	1.42	74	1.17	47	1.25	55	1.50	84
2	1.25	55	1.17	47	1.25	55	1.50	84
3	1.42	74	1.25	55	1.25	55	1.42	74
4	1.33	64	1.50	84	1.35	55	1.42	74
5	1.25	55	1.33	64	1.25	55	1.50	84
6	1.33	64	1.33	64	1.25	55	1.58	94
7	1.33	64	1.25	55	1.25	55	1.58	94
8	1.33	64	1.25	55	1.33	64	1.58	94
9	1.42	74	1.25	55	1.33	64	1.50	84
10	1.33	64	1.25	55	1.25	55	1.58	94
11	1.42	74	1.25	55	1.25	55	1.50	84
12	1.42	74	1.42	74	1.33	64	1.50	84
13	1.33	64	1.33	64	1.33	64	1.58	94
14	1.33	64	1.33	64	1.33	64	1.50	84
15	1.50	84	1.33	64	1.33	64	1.50	84
16	1.50	84	1.25	55	1.42	74	1.33	64
17	1.50	84	1.25	55	1.42	74	1.33	64
18	1.50	84	1.25	55	1.50	84	1.33	64
19	1.42	74	1.25	55	1.42	74	1.42	74
20	1.42	74	1.25	55	1.42	74	1.42	74
21	1.42	74	1.25	55	1.42	74	1.42	74
22	1.42	74	1.25	55	1.42	74	1.42	74
23	1.50	84	1.25	55	1.33	64	1.25	55
24	1.42	74	1.25	55	1.33	64	1.25	55
25	1.33	64	1.25	55	1.42	74	1.25	55
26	1.33	64	1.25	55	1.42	74	1.25	55
27	1.42	74	1.25	55	1.67	105	1.25	55
28	1.33	64	1.17	47	1.67	105	1.25	55
29	1.25	55	1.25	55	1.58	94	1.25	55
30	1.33	64	1.25	55	1.58	94	1.25	55
31	1.25	55	1.25	55	.....	.....	1.25	55

Monthly Discharge of Rocky Saugeen River near Markdale for 1914-5

Drainage Area, 96 Square Miles

Month.	Discharge in Second-feet.			Discharge in Second-feet per Square Mile			Run-off
	Maximum	Minimum	Mean	Maximum	Minimum	Mean	Depth in Inches on Drainage Area
November (1914).							
December ..							
January (1915).							
February							
March							
April							
May							
June 8-30.....	84	55	72	.87	.57	.75	.64
July.....	84	55	61	.87	.57	.64	.74
August	84	47	58	.87	.49	.60	.69
September ,....	105	55	69	1.09	.57	.72	.80
October	94	55	73	.98	.57	.76	.88
The period.....	105	47	66	1.09	.49	.69	3.75

Saugeen River near Port Elgin

Location—At the highway bridge known as McCaider's Bridge, 4 miles north-east of the Town of Port Elgin, near lot 5, concession 12, Township of Saugeen, County of Bruce.

Records Available—Discharge measurements from July, 1911. Daily gauge heights April 19, 1914, to October 31, 1915.

Drainage Area—1,565 square miles.

Gauge—Vertical staff 0 to 12 feet on right abutment downstream side. Zero on gauge (elevation 4.00) is referred to a B.M. (elevation 25.00) painted on wooden hand-rail of bridge.

Channel and Control—The channel is straight for about 350 feet above and below the section. The bed of the stream, with two submerged piers existing at the section, is composed of fairly large boulders, which will only shift during high flood stages. The current is moderate and flows through two channels, which are separated by the centre pier of the bridge.

Discharge Measurements—Made from the bridge at all stages.

Winter Flow—Ice greatly affects relation of gauge height to discharge. Measurements are made during the winter to determine the approximate flow.

Regulation—Fluctuations have been noted in the river stage at this section. This is no doubt caused by the plants at Walkerton, Chesley and Paisley.

Accuracy—Semi-daily readings should give a fair representative mean. The fluctuations that have been noted are not large, consequently the gauge height records can be classified as good. A well-defined curve is shown for flows up to 2,000 sec. feet. A slight angle in cross-section No. 1 may affect accuracy of meter measurements.

Observer—John Shanks, Southampton.

Discharge measurements of Saugeen River near Pt. Elgin in 1915

Date	Hydrographer	Width in Feet	Area of Section in Sq. Feet	Mean Velocity in Feet per Sec.	Gauge Height in Feet	Discharge in Sec-Feet	Discharge in Second-feet per Square Mile
Feb. 1....	Murray, W.S....	194	633	0.57	5.84	362 (a)	.....
Mar. 3....	"	197	1,109	2.07	7.08	2,305 (b)	.....
Apr. 23....	Roberts, E....	197	955	1.63	6.29	1,556	.....
May 23....	"	192	759	0.95	5.33	729	.....
June 16....	"	192	755	0.87	5.25	659	.....
July 18....	"	190	690	0.75	4.92	518	.....
" 18....	"	190	672	0.67	4.85	452	.....
Aug. 6....	"	192	822	1.11	5.60	914	.....
" 26....	"	192	793	1.03	5.48	818	.....
Sept. 15....	"	197	969	1.59	6.35	1,543	.....
Oct. 19....	"	191	889	1.33	5.94	1,187	.....

(a) Ice measurement.

(b) Measurement made 15 feet below gauge, slush ice and frost interfering.

Daily Gauge Height and Discharge of Saugeen River near Port Elgin for 1914-5

Drainage Area 1,565 Square Miles

Day	November			December			January			February			March			April			May			June			July			August			September			October		
	Gauge Ht.		Dis-charge	Gauge Ht.		Dis-charge	Gauge Ht.		Dis-charge	Gauge Ht.		Dis-charge	Gauge Ht.		Dis-charge	Gauge Ht.		Dis-charge	Gauge Ht.		Dis-charge	Gauge Ht.		Dis-charge	Gauge Ht.		Dis-charge	Gauge Ht.		Dis-charge	Gauge Ht.		Dis-charge			
	Feet	Sec-ft.		Feet	Sec-ft.		Feet	Sec-ft.		Feet	Sec-ft.		Feet	Sec-ft.		Feet	Sec-ft.		Feet	Sec-ft.		Feet	Sec-ft.		Feet	Sec-ft.		Feet	Sec-ft.		Feet	Sec-ft.				
1	4.75	520	1890	6.44	1890	5.75	724	5.88	860	3842	6.83	2093	1153	5.10	590	4.71	418	4.67	404	4.98	530	6.58	1818													
2	4.83	575	1860	6.42	1860	5.71	700	6.17	965	3017	6.83	2093	1072	5.00	540	4.73	425	4.62	387	4.94	510	6.27	1480													
3	4.83	575	1750	6.29	1750	5.75	689	6.08	1135	2368	6.71	1961	1072	4.93	505	4.94	510	4.69	411	4.87	478	6.17	1381													
4	4.96	650	1650	6.19	1650	5.75	712	6.12	1335	2467	6.58	1818	1072	4.87	478	4.75	432	5.42	773	4.83	462	6.14	1353													
5	4.96	650	1480	6.00	1480	5.75	773	6.21	1420	2742	6.88	2148	973	4.92	500	4.73	425	5.48	812	4.75	432	6.37	1567													
6	4.92	640	1430	5.94	1430	5.83	860	6.25	1460	2742	7.12	2412	944	4.79	446	4.92	500	5.62	909	4.81	454	6.83	2093													
7	4.92	640	1380	5.88	1380	5.90	923	6.37	1587	2742	7.17	2467	944	4.79	446	4.92	500	5.62	909	4.81	454	6.83	2093													
8	4.92	640	1330	6.17	1330	6.17	965	6.50	1730	2742	7.17	2467	944	4.79	446	4.92	500	5.62	909	4.81	454	6.83	2093													
9	4.96	650	1280	6.33	1280	6.33	1045	6.67	1917	2742	7.17	2467	944	4.79	446	4.92	500	5.62	909	4.81	454	6.83	2093													
10	4.92	640	1220	6.42	1220	6.42	1153	6.62	1862	2742	7.17	2467	944	4.79	446	4.92	500	5.62	909	4.81	454	6.83	2093													
11	4.88	610	1170	6.62	1170	6.46	1252	6.64	1884	2742	7.17	2467	944	4.79	446	4.92	500	5.62	909	4.81	454	6.83	2093													
12	4.92	640	1050	6.54	1050	6.54	1315	6.88	2148	2742	7.17	2467	944	4.79	446	4.92	500	5.62	909	4.81	454	6.83	2093													
13	5.00	690	960	6.46	960	6.46	1351	7.08	2368	2742	7.17	2467	944	4.79	446	4.92	500	5.62	909	4.81	454	6.83	2093													
14	5.21	855	850	6.50	850	6.50	1470	7.25	2555	2742	7.17	2467	944	4.79	446	4.92	500	5.62	909	4.81	454	6.83	2093													
15	5.58	1130	690	6.42	690	6.42	1430	8.42	3842	2742	7.17	2467	944	4.79	446	4.92	500	5.62	909	4.81	454	6.83	2093													
16	5.92	1420	610	6.40	610	6.40	1460	8.50	3930	2742	7.17	2467	944	4.79	446	4.92	500	5.62	909	4.81	454	6.83	2093													
17	6.17	1690	575	6.40	575	6.40	1490	8.92	4392	2742	7.17	2467	944	4.79	446	4.92	500	5.62	909	4.81	454	6.83	2093													
18	6.00	1480	500	6.58	500	6.58	1520	8.25	3655	2742	7.17	2467	944	4.79	446	4.92	500	5.62	909	4.81	454	6.83	2093													
19	5.79	1300	480	6.92	480	6.92	1560	8.00	3380	2742	7.17	2467	944	4.79	446	4.92	500	5.62	909	4.81	454	6.83	2093													
20	5.58	1180	460	6.68	460	6.68	1620	8.17	3567	2742	7.17	2467	944	4.79	446	4.92	500	5.62	909	4.81	454	6.83	2093													
21	5.83	1370	460	6.88	460	6.88	1620	8.42	3842	2742	7.17	2467	944	4.79	446	4.92	500	5.62	909	4.81	454	6.83	2093													
22	5.62	1170	471	6.75	471	6.75	1510	7.33	2643	2742	7.17	2467	944	4.79	446	4.92	500	5.62	909	4.81	454	6.83	2093													
23	5.08	750	490	6.67	490	6.67	1410	7.71	3061	2742	7.17	2467	944	4.79	446	4.92	500	5.62	909	4.81	454	6.83	2093													
24	5.21	850	510	6.54	510	6.54	1315	10.50	6130	2742	7.17	2467	944	4.79	446	4.92	500	5.62	909	4.81	454	6.83	2093													
25	6.00	1480	520	6.39	520	6.39	1270	10.33	5943	2742	7.17	2467	944	4.79	446	4.92	500	5.62	909	4.81	454	6.83	2093													
26	6.92	2400	521	6.30	520	6.30	1315	9.42	4942	2742	7.17	2467	944	4.79	446	4.92	500	5.62	909	4.81	454	6.83	2093													
27	7.41	2990	800	6.37	800	6.37	1297	8.71	4161	2742	7.17	2467	944	4.79	446	4.92	500	5.62	909	4.81	454	6.83	2093													
28	7.12	2620	558	1000	6.33	1153	8.75	4205	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
29	6.67	2120	554	1000	6.25	1005	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
30	6.62	2070	556	1000	6.17	895	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
31	.....	.....	980	6.08	980	6.08	860	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

NOTE.—Relation of gauge height to discharge affected by ice from Dec. 20th, 1914, to Feb. 4th, 1915; discharges for period computed from discharge measurements, observer's notes and climatologic records.

Monthly Discharge of Saugeen River near Port Elgin for 1914-5

Drainage Area, 1,565 Square Miles

Month	Discharge in Second-feet			Discharge in Second-feet per Square Mile			Run-off
	Maximum	Minimum	Mean	Maximum	Minimum	Mean	Depth in Inches on Drainage Area
November(1914).	2,990	520	1,166	1.91	.34	.74	.82
December .. .	1,890	460	983	1.21	.29	.63	.73
January ((1915)).	1,620	689	1,183	1.04	.44	.76	.88
February	5,943	860	2,890	3.80	.55	1.85	1.92
March.....	3,842	1,774	2,674	2.45	1.13	1.71	1.97
April.....	5,943	1,119	2,591	3.80	.72	1.66	1.85
May	1,153	500	811	.74	.32	.52	.60
June	944	432	608	.60	.28	.39	.44
July.....	1,108	418	515	.71	.27	.33	.38
August	1,037	387	729	.66	.25	.47	.54
September.....	2,742	418	1,138	1.75	.27	.73	.81
October.....	2,489	706	1,309	1.59	.45	.83	.96
The year ...	5,943	387	1,371	3.80	.25	.88	11.90

Saugeen River near Walkerton

Location—At the south line bridge 3½ miles above the Town of Walkerton, near lot 39, concession 2, Township of Brant, County of Bruce.

Records Available—Discharge measurements from June, 1912. Daily gauge heights March 26, 1914, to October 31, 1915.

Drainage Area—895 square miles.

Gauge—Vertical staff 0 to 12 feet on post driven in bed of stream and protected by overhanging tree on right bank 100 feet downstream from bridge. Zero on the gauge is 12.00 feet, which is referred to a B.M. (elevation 35.00) on tension rod of bridge.

Channel and Control—Channel is straight for about 500 feet above and below the section. Both banks are high, and do not overflow. The river bed is composed of clay, one channel existing at all stages.

Discharge Measurements—Made from the bridge at all stages.

Winter Flow—Ice greatly affects relation of gauge height to discharge. Measurements are made to determine the approximate winter flow.

Regulation—The dam at Walkerton, about 3½ miles downstream, has no effect on the river stage at this section.

Accuracy—Weeds below the section have a decided effect on the accuracy of the measurements. During the period when weeds are present a different rating curve has been established. There are not sufficient records available to define the two curves at all stages, and therefore discharges cannot be classed as very good.

Observer—Henry Russwurm, Walkerton.

Discharge Measurements of Saugeen River near Walkerton in 1915

Date	Hydrographer	Width in Feet	Area of Section in Sq. Feet	Mean Velocity in Feet per Sec.	Gauge Height in Feet	Discharge in Sec-Feet	Discharge in Second-feet per Square Mile
April 24....	Roberts, E	125	568	1.43	16.25	814	.....
May 24....	“	123	484	0.95	15.46	460	.....
June 16....	“	122	504	1.19	15.68	600	.....
July 19....	“	119	458	0.71	15.33	329	.....
“ 19....	“	119	469	0.74	15.40	350	.....
Aug. 7....	“	123	538	0.98	15.98	529	.....
“ 26....	“	122	514	1.02	15.80	527	.....
Sept. 15....	“	124	629	1.58	16.81	992	.....
Oct. 19....	“	124	561	1.17	16.14	657	.....

Daily Gauge Height and Discharge of Saugeen River near Walkerton for 1914-5

Drainage Area, 895 Square Miles

Date	November		December		January		February		March		April		May		June		July		August		September		October	
	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge
	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.
1	15.17	350	17.17	1670	15.58	405	16.08	640	18.00	1830	16.79	1115	16.08	740	15.29	310	15.17	275	15.14	270	15.29	310	16.42	810
2	15.17	350	17.08	1600	15.50	380	16.08	640	18.00	1830	16.54	975	15.92	665	15.21	290	15.17	275	15.17	275	15.27	305	16.37	785
3	15.25	390	17.00	1545	15.83	485	16.08	640	17.08	1280	16.54	975	15.92	665	15.17	290	15.17	275	15.50	385	15.21	290	16.37	785
4	15.25	390	16.67	550	15.83	485	16.25	710	17.25	1380	16.37	885	15.92	665	15.17	275	15.04	245	15.85	530	15.17	275	16.37	785
5	15.17	350	16.50	1165	15.92	510	16.25	825	17.25	1175	16.88	1165	15.83	625	15.19	280	15.21	290	15.87	540	15.21	290	17.08	1180
6	15.17	350	15.83	660	16.17	600	16.25	825	16.67	900	17.16	1325	15.67	555	15.12	265	15.33	325	15.96	580	15.17	275	18.04	1755
7	15.08	305	15.50	520	16.17	600	16.25	825	16.58	855	17.42	1480	15.75	585	15.08	255	15.29	310	15.96	580	15.04	245	18.12	1810
8	15.25	390	15.67	550	16.25	630	16.25	825	16.50	820	17.88	1760	15.83	625	15.29	310	15.29	310	15.96	580	15.04	245	18.12	1810
9	15.25	390	15.33	430	16.25	630	16.17	785	16.42	780	18.91	2420	15.83	625	15.29	310	15.29	310	15.79	505	15.55	330	17.42	1380
10	15.17	350	15.33	430	16.17	600	16.17	785	16.33	745	19.83	3060	15.83	625	15.29	310	15.29	310	15.62	435	15.46	370	17.04	1155
11	15.17	350	15.50	520	16.08	565	16.17	785	16.25	710	20.66	3640	15.83	625	15.29	310	15.08	255	15.50	385	15.46	370	16.62	920
12	15.17	350	15.42	475	16.17	600	16.25	825	16.42	780	20.80	3740	15.83	625	15.29	310	15.29	310	15.69	460	15.37	340	16.33	765
13	15.33	430	15.42	475	16.17	600	16.25	825	16.42	780	20.04	3210	15.83	625	15.29	310	15.25	300	15.92	565	16.19	695	15.96	580
14	15.50	520	15.33	430	16.17	600	16.92	1190	16.58	855	18.79	2345	15.50	485	15.29	310	15.21	290	15.79	505	16.92	1085	16.08	640
15	15.50	520	15.33	430	16.08	565	16.92	1190	16.96	1210	17.95	1800	15.58	515	15.42	355	15.12	265	15.75	485	16.83	1035	16.17	685
16	15.92	710	15.33	430	16.00	540	16.92	1190	17.00	1280	17.46	1505	15.50	485	15.58	415	15.08	255	15.73	480	16.50	855	16.25	725
17	16.33	1040	15.50	520	16.25	630	16.67	1050	17.12	1300	17.38	1460	15.42	455	15.69	460	15.08	255	15.58	415	16.73	980	16.21	705
18	16.17	870	15.75	600	16.25	630	16.50	955	17.25	1380	17.00	1290	15.25	400	15.58	415	15.25	300	15.46	370	17.01	1180	16.17	685
19	15.92	710	15.75	600	16.33	660	16.50	955	17.33	1430	16.88	1165	15.16	375	15.79	505	15.33	325	15.33	325	16.78	970	16.08	640
20	15.92	710	15.75	600	16.33	660	16.50	955	17.12	1300	16.59	1005	15.33	425	15.42	355	15.35	330	15.29	310	16.46	835	16.17	685
21	15.67	550	15.75	600	16.00	600	16.50	955	17.08	1280	16.42	910	15.25	400	15.42	355	15.29	310	15.25	300	16.29	745	16.21	705
22	15.50	520	15.75	600	16.08	570	16.50	955	17.00	1280	16.29	845	15.30	485	15.37	340	15.12	265	15.29	310	15.96	580	16.08	640
23	15.67	550	15.67	550	16.08	570	18.25	1995	17.12	1300	16.17	785	15.33	425	15.25	300	15.19	280	15.37	340	16.00	600	16.00	600
24	15.42	475	15.42	475	16.08	570	18.42	2105	17.29	1405	16.25	825	15.46	470	15.21	290	15.10	260	15.54	400	15.71	470	15.71	470
25	15.75	600	15.42	475	16.17	600	18.25	1995	18.08	1880	16.17	785	15.42	455	15.21	290	15.06	250	15.83	525	15.73	480	15.64	440
26	16.00	810	15.42	475	16.17	600	18.08	1880	17.96	1805	16.25	825	15.33	425	15.17	275	15.14	270	15.83	525	15.67	455	15.71	470
27	16.50	1165	15.58	565	16.08	570	17.08	1280	17.67	1630	16.17	785	15.33	425	15.12	265	15.12	265	15.83	525	15.67	455	15.71	470
28	16.42	1060	15.58	565	16.08	570	17.08	1280	17.37	1450	16.25	825	15.25	400	15.04	245	15.14	270	15.54	400	18.14	1820	15.54	400
29	16.42	1060	15.75	600	15.92	510	.....	.....	17.21	1355	16.17	785	15.33	425	15.04	245	15.12	265	15.42	355	17.69	1545	15.54	400
30	16.67	1240	15.75	600	15.92	510	.....	.....	17.07	1350	16.17	785	15.25	400	15.04	245	15.12	265	15.50	385	17.00	1130	15.54	400
31	.....	.....	15.67	550	15.92	510	.....	.....	16.96	1210	.....	.....	15.17	375	.....	.....	15.08	255	15.37	340	.....	.....	15.50	385

Monthly Discharge of Saugeen River near Walkerton for 1914-5

Drainage Area 895 Square Miles

Month	Discharge in Second-feet			Discharge in Second-feet per Square Mile			Run-off
	Maximum	Minimum	Mean	Maximum	Minimum	Mean	Depth in Inches on Drainage Area
November (1914)	1,240	305	594	1.39	.34	.66	.73
December "	1,670	430	653	1.87	.48	.73	.84
January .. (1915)	660	380	566	.74	.42	.63	.73
February	2,105	640	1,067	2.35	.72	1.19	1.24
March	1,880	710	1,248	2.10	.79	1.39	1.60
April	3,740	785	1,480	4.18	.88	1.65	1.84
May.....	740	375	519	.83	.42	.58	.67
June.....	505	245	321	.56	.27	.36	.40
July.....	330	245	281	.37	.27	.31	.36
August	580	270	442	.65	.30	.49	.56
September.....	1,820	245	657	2.04	.27	.73	.81
October	1,810	385	766	2.02	.43	.86	.99
The year	3,740	245	713	4.18	.27	.80	10.77

Sydenham near Owen Sound

Location—At the highway bridge above the Town of Owen Sound's filtration plant, near lot 9, concession 1, Township of Derby, County of Grey.

Records Available—Discharge measurements and daily gauge heights from June 9 to October 31, 1915.

Drainage Area—71 square miles.

Gauge—Vertical staff 0 to 6 feet on upstream side of first pier from right abutment. Zero on the gauge is 0.00.

Channel and Control—The channel is straight for 200 feet above and below the section, both banks are low but do not overflow, the stream never assuming flood proportions. The bed is composed of solid rock, with two channels during the low-water period. During the high-water stages all the water is confined between the two abutments of the bridge.

Discharge Measurements—Made from the bridge during the high-water period, and from a permanent wading section located 30 feet upstream during the low stages.

Winter Flow—Ice greatly interferes with the metering of this stream.

Regulation—The Town of Owen Sound has a dam 300 feet above this section that is used to supply water for the filtration beds.

Diversions—An additional 750,000 gallons of water per day should be added to the daily flow at this section, which is the approximate amount diverted.

Accuracy—There are not sufficient readings to define a curve at all stages. Discharges between gauge heights .90 and 1.20 are fair.

Observer—Myrtle Cook, Ashley P.O.

Discharge Measurements of Sydenham River near Owen Sound in 1915

Date	Hydrographer	Width in Feet	Area of Section in Sq. Feet	Mean Velocity in Feet per Sec.	Gauge Height in Feet	Discharge in Sec-Feet	Discharge in Second-feet per Square Mile
June 9....	Roberts, E....	46	27	1.73	1.14	46	.....
July 11....	"	45	18	0.88	0.89	15	.....
" 20....	"	46	21	1.37	1.00	28	.....
Aug. 12....	"	45	21	1.00	0.98	21	.....
Sept. 17....	"	45	23	1.05	1.00	24	.....
Oct. 21....	"	49	28	1.47	1.14	40	.....

Monthly Discharge of Sydenham River near Owen Sound for 1914-5

Drainage Area 71 Square Miles

Month	Discharge in Second-feet			Discharge in Second-feet per Square Mile			Run-off
	Maximum	Minimum	Mean	Maximum	Minimum	Mean	Depth in Inches on Drainage Area.
November (1914)	.....	.....	.....	.....	.....	.....	.....
December "	.....	.....	.....	.....	.....	.....	.....
January .. (1915)	.....	.....	.....	.....	.....	.....	.....
February .....	.....	.....	.....	.....	.....	.....	.....
March .....	.....	.....	.....	.....	.....	.....	.....
April .....	.....	.....	.....	.....	.....	.....	.....
May .....	.....	.....	.....	.....	.....	.....	.....
June 9-30	51	21	26	.72	.30	.37	.30
July	34	18	23	.48	.25	.32	.37
August	46	18	28	.65	.25	.39	.45
September	70	14	30	.99	.20	.42	.47
October	57	25	41	.80	.35	.58	.67
The period	70	14	31	.99	.19	.44	2.26

Thames River (Main Stream) near Byron

Location—At the highway bridge known as Kilworth Bridge, 2 miles north-west of The Town of Byron, near the Village of Komoka, Township of Delaware, County of Middlesex.

Records Available—Monthly discharge measurements from March, 1912. Daily gauge heights March 13, 1914, to October 31, 1915.

Drainage Area—1,270 square miles.

Gauge—Vertical staff 0 to 12 feet on centre pier. The zero on gauge (elevation 6.00), which has remained unchanged since established, is referred to a B.M. (elevation 31.21) on downstream side of right abutment.

Channel and Control—Channel is straight above and below section for about 600 feet. The banks are high, and do not overflow or shift to a great extent. The control, however, is not stationary under high-water conditions. The velocity is high.

Discharge Measurements—Made from the bridge at all stages.

Winter Flow—Ice is present during the winter period, and measurements are made to determine the winter flow.

Accuracy—During flood stages the high velocity necessitates the taking of surface readings. The station rating curve is fairly well defined for ordinary flows.

Observer—James Bourne, Komoka.

Discharge Measurements of Thames River (Main Stream) near Byron in 1915

Date	Hydrographer	Width in Feet	Area of Section in Sq. Feet	Mean Velocity in Feet per Sec.	Gauge Height in Feet	Discharge in Sec-Feet	Discharge in Second-feet per Square Mile
Feb. 4....	Murray, W. S...	180	564	0.95	9.42	536 (a)	.....
Mar. 2....	"	230	635	4.08	8.42	2,592 (b)	.....
May 11....	Roberts, E.	221	330	2.45	7.06	809	.....
June 23....	"	174	207	1.08	6.54	224	.....
July 29....	"	221	541	3.42	8.10	1,851	.....
Aug. 6....	"	234	635	3.64	8.50	2,316	.....
Oct. 5....	"	206	406	3.31	7.54	1,344	.....

(a) Ice measurement; ice jam 250 feet below.
(b) Velocity too high and weights insufficient to hold meter in place.

Daily Gauge Height and Discharge of Thames River (main stream) near Byron for 1914-5

Drainage Area, 1270 Square Miles

Date	November		December		January		February		March		April		May		June		July		August		September		October	
	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge
	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.
1	6.42	305	7.67	1385	6.92	325	9.33	1205	8.75	2585	7.25	950	6.75	520	6.42	305	6.33	260	7.46	1165	6.75	520	7.25	950
2	6.42	305	8.08	1835	6.75	280	9.33	560	8.17	2210	7.25	950	6.67	460	6.42	305	6.33	260	7.04	765	6.75	520	7.33	1030
3	6.42	305	7.75	1470	6.83	350	9.33	505	8.17	1930	7.17	880	6.67	460	6.46	325	6.33	260	6.96	690	6.67	410	7.83	1560
4	6.42	305	7.33	1030	6.83	350	9.50	535	7.58	1290	7.17	880	6.67	460	6.42	305	6.33	260	7.25	950	6.62	425	7.58	1290
5	6.42	305	7.25	950	6.83	350	9.33	560	7.42	1120	7.17	880	6.75	520	6.46	325	6.58	400	8.92	2785	6.42	305	7.58	1290
6	6.42	305	7.00	725	6.83	350	9.50	1525	7.33	1030	7.75	1470	6.75	520	6.50	350	6.57	400	8.50	2300	6.58	400	7.67	1385
7	6.42	305	7.92	1655	7.33	575	9.83	1080	7.33	1030	8.00	1745	6.83	585	6.42	305	6.62	425	8.27	2040	6.67	460	7.42	1120
8	6.42	305	7.75	1470	8.00	1745	9.83	1080	7.33	1030	8.00	1745	7.17	880	6.58	400	7.17	880	8.46	2255	6.87	616	7.25	950
9	6.33	260	7.92	1655	8.42	2210	9.75	1965	7.33	1030	8.25	2020	7.17	880	6.96	685	7.25	950	9.04	2928	6.87	616	7.17	880
10	6.33	260	7.67	1385	8.83	2680	9.67	2645	7.33	1030	9.67	3685	7.17	880	6.79	550	7.00	725	8.08	1835	6.83	585	7.17	880
11	6.33	260	7.58	1285	8.83	2680	9.50	3480	7.50	1205	10.08	4175	7.08	795	6.67	460	6.62	425	7.58	1290	6.89	616	7.08	795
12	6.33	260	7.50	1205	8.75	2585	10.08	4175	7.67	1385	8.75	2585	6.92	655	6.67	460	6.96	690	7.92	1655	6.89	616	7.08	795
13	6.42	305	6.58	400	8.75	2585	10.83	5075	7.67	1385	8.75	2585	6.71	490	6.58	400	6.96	690	10.17	4285	7.83	1260	6.96	690
14	6.50	350	6.58	400	8.67	2495	11.50	5340	8.00	1745	8.08	1835	6.75	520	6.58	400	6.83	585	9.25	3180	7.79	1405	7.42	1120
15	6.67	460	6.58	400	8.67	2495	14.83	9875	9.33	3275	7.75	1470	6.67	460	6.58	400	6.67	490	8.46	2255	7.42	1120	8.29	2065
16	6.92	655	6.75	400	8.83	2475	10.33	4475	9.75	3780	7.58	1290	6.67	460	6.62	425	6.58	400	8.50	2300	7.12	835	8.00	1745
17	7.50	1205	6.83	400	8.83	2415	9.92	3985	9.08	2975	7.50	1205	6.67	460	6.67	460	6.50	350	7.87	1600	7.08	795	7.54	1245
18	7.17	880	6.83	400	8.92	2355	9.75	3780	8.50	2500	7.42	1120	6.67	460	6.58	400	6.42	305	7.79	1405	7.04	765	7.25	950
19	7.08	895	6.83	400	8.92	2255	9.17	3085	8.33	2110	7.25	950	6.67	460	6.58	400	6.42	305	7.46	1165	7.00	725	7.29	990
20	6.83	585	6.83	400	9.17	2130	8.75	2585	7.92	1655	7.17	880	6.67	460	6.50	350	6.42	305	7.46	1165	6.96	685	7.33	1030
21	6.67	460	6.83	400	9.17	1905	8.58	2390	7.92	1655	7.00	725	6.58	400	6.50	350	6.46	325	6.79	550	6.92	655	7.25	950
22	6.67	460	7.00	410	9.17	1710	8.92	2785	7.75	1470	7.00	725	6.58	400	6.50	350	6.42	305	6.87	615	6.87	615	7.17	880
23	6.58	400	7.17	480	9.25	1525	9.50	3480	7.67	1385	6.96	685	6.33	260	6.50	350	6.42	305	7.21	915	6.79	550	7.00	725
24	6.58	400	7.17	480	9.25	1205	14.25	9180	7.58	1290	7.08	795	6.25	220	6.42	305	6.42	305	7.25	950	6.75	520	6.96	690
25	6.75	520	7.08	410	9.25	1525	11.83	6275	7.50	1205	7.00	725	6.46	325	6.42	305	6.42	305	7.37	1070	6.67	460	6.83	585
26	6.75	520	6.92	350	9.33	1310	10.75	4980	8.75	2585	6.92	655	6.58	400	6.42	305	6.42	305	7.37	1070	6.74	512	6.83	585
27	8.25	2020	6.83	275	9.33	1000	9.67	3685	8.00	1745	6.83	585	6.50	350	6.42	305	6.62	425	7.12	835	9.62	3624	6.79	550
28	8.08	1835	7.00	360	9.25	725	9.25	3180	7.75	1470	6.75	520	6.50	350	6.37	280	6.83	585	6.92	655	8.79	2634	6.75	520
29	7.42	1120	6.92	360	9.33	560	.....	.....	7.50	1205	6.92	655	6.50	350	6.33	260	8.29	2065	6.87	615	8.04	1789	6.75	520
30	7.42	1120	7.00	325	9.33	350	.....	.....	7.42	1120	6.83	585	6.50	350	6.33	260	8.00	1745	6.83	585	7.54	1247	6.75	520
31	.....	.....	6.92	325	9.33	815	.....	.....	7.33	1030	.....	.....	6.50	350	.....	.....	8.17	1930	6.83	585	.....	.....	6.71	490

NOTE.—Relation of gauge height to discharge affected by ice from Dec. 16th, 1914, to Jan. 5th, 1915, and Jan. 16th, to Feb. 10th, 1915; discharges for period computed from discharge measurements, observer's notes and climatologic records.

Monthly Discharge of Thames River near Byron for 1914-5

Drainage Area, 1,270 Square Miles

Month	Discharge in Second-feet *			Discharge in Second-feet per Square Mile.			Run-off
	Maximum	Minimum	Mean	Maximum	Minimum	Mean	Depth in Inches on Drainage Area
November. (1914)	2,020	260	589	1.59	.20	.46	.51
December . "	1,835	275	755	1.44	.21	.59	.68
January... (1915)	2,680	280	1,494	2.11	.22	1.18	1.36
February	9,875	505	3,338	7.78	.41	2.63	2.74
March	3,780	1,030	1,692	2.98	.81	1.33	1.53
April	4,175	520	1,378	3.29	.41	1.09	1.22
May	880	220	486	.69	.17	.38	.44
June.....	685	260	368	.54	.20	.29	.32
July.....	2,065	260	583	1.63	.20	.46	.53
August	4,285	550	1,488	3.37	.43	1.17	1.35
September	3,624	305	875	2.86	.24	.69	.77
October.....	2,065	490	963	1.63	.39	.76	.88
The year	9,875	220	1,154	7.78	.17	.91	12.33

Thames River (South Branch) near Ealing

Location—At the highway bridge known as Vauxhall Bridge between lots 10 and 11, concession B, between Townships of London and Westminster, County of Middlesex.

Records Available—Daily gauge heights and discharge measurements May 11 to October 31, 1915.

Drainage Area—515 square miles.

Gauge—Vertical staff 0 to 12 ft. on downstream side of first right pier. Elevation of zero on gauge is 4.00, referred to B.M., elevation 30.00.

Channel and Control—The channel is straight above and below for 800 feet. The banks and control are shifting under high-water conditions.

Discharge Measurements—Made from the bridge. During the extreme low water a wading section is used.

Winter Flow—The relation of gauge height to discharge is affected by ice during the winter months.

Accuracy—The rating curve is fairly well defined up to gauge height 8.00 feet.

Observer—Geo. Beadle, London.

Discharge Measurements of Thames River (South Branch) near Ealing in 1915

Date	Hydrographer	Width in Feet	Area of Section in Sq. Feet	Mean Velocity in Feet per Sec.	Gauge Height in Feet	Discharge in Sec-Feet	Discharge in Second-feet per Square Mile
Feb. 4....	Murray, W. S...	157	262	0.16	.....	43 (a)	.....
May 11....	Roberts, E.....	156	302	1.27	6.98	383	.....
June 23....	"	98	137	0.71	6.12	96 (b)	.....
July 27....	"	151	257	1.07	6.69	273	.....
" 29....	"	164	456	1.63	7.94	746	.....
Aug. 6....	"	189	655	2.16	9.07	1,429	.....
Oct. 5....	"	163	398	1.57	7.60	625	.....

(a) Ice measurement made at McClary's highway bridge, London.

(b) Measurement made at permanent low water section.

Monthly Discharge of Thames River (South Branch) near Ealing for 1914-5

Drainage Area 515 Square Miles

Month	Discharge in Second-feet			Discharge in Second-feet per Square Mile			Run-off
	Maximum	Minimum	Mean	Maximum	Minimum	Mean	Depth in Inches on Drainage Area
November (1914).							
December ..							
January (1915).							
February							
March.....							
April.....							
May 11-31.....	375	105	180	.73	.20	.35	.27
June	287	68	123	.56	.13	.24	.27
July.....	565	60	200	1.10	.12	.39	.45
August.....	1,422	234	578	2.76	.45	1.12	1.29
September.....	1,527	162	433	2.97	.31	.84	.94
October.....	705	198	414	1.37	.38	.80	.92
The period	1,527	60	330	2.97	.12	.64	4.14

Thames River (North Branch) near Fanshaw

Location—At the highway bridge near Fanshaw Post Office, between lots 8 and 9, concessions 4 and 5, Township of London, County of Middlesex.

Records Available—Daily gauge heights and discharge measurements May 13 to October 31, 1915.

Drainage Area—650 square miles approximately.

Gauge—Vertical staff 0 to 12 feet on right abutment, downstream side. Elevation of zero on gauge 4.00 is referred to a B.M. (elevation 30.00) on tension rod, downstream side, 170 feet from the initial point for soundings.

Channel and Control—The channel is straight above and below section for 500 feet. The bed of the stream is composed of clay and gravel, the banks are high and will not overflow. The channel and control is shifting during high-water periods.

Discharge Measurements—Made from the bridge and at a permanent wading section about 500 feet above during low water.

Accuracy—There are not sufficient records available to define rating curve at all stages.

Observer—Allen Donley, London.

Discharge Measurements of Thames River (North Branch) near Fanshaw in 1915

Date	Hydrographer	Width in Feet	Area of Section in Sq. Feet	Mean Velocity in Feet per Sec.	Gauge Height in Feet	Discharge in Sec-Feet	Discharge in Second-feet per Square Mile
Feb. 4....	Murray, W. S...	82	81	1.91	.....	156 (a)	.....
May 13....	Roberts, E.....	88	158	0.99	7.00	157 (b)	.....
June 23....	"	89	139	0.65	6.75	90 (b)	.....
July 27....	"	89	137	0.67	6.73	92 (b)	.....
" 29....	"	171	733	1.04	8.12	764	.....
Aug. 6....	"	171	699	0.88	7.93	618	.....
Oct. 5....	"	171	716	1.09	3.05	782	.....

(a) Ice measurement made at Richmond Street Highway Bridge, London.
(b) Measurement made at permanent low water section.

Daily Gauge Height and Discharge of Thames River (North Branch) near Fanshaw for 1914-5

Drainage Area, 650 Square Miles

Day	November		December		January		February		March		April		May		June		July		August		September		October	
	November		December		January		February		March		April		May		June		July		August		September		October	
	Gauge Ht.	Dis- charge	Gauge Ht.	Dis- charge	Gauge Ht.	Dis- charge	Gauge Ht.	Dis- charge	Gauge Ht.	Dis- charge	Gauge Ht.	Dis- charge	Gauge Ht.	Dis- charge	Gauge Ht.	Dis- charge	Gauge Ht.	Dis- charge	Gauge Ht.	Dis- charge	Gauge Ht.	Dis- charge	Gauge Ht.	Dis- charge
	Feet	Sec-ft.	Feet	Sec-ft.	Feet	Sec-ft.	Feet	Sec-ft.	Feet	Sec-ft.	Feet	Sec-ft.	Feet	Sec-ft.	Feet	Sec-ft.	Feet	Sec-ft.	Feet	Sec-ft.	Feet	Sec-ft.	Feet	Sec-ft.
1	6.60	70	6.46	49	7.27	243	6.87	119	7.71	457
2	6.46	49	6.29	29	7.29	251	6.79	103	7.71	457
3	6.54	61	6.35	35	7.21	219	6.77	99	7.75	485
4	6.56	64	6.48	52	7.58	380	6.75	95	7.77	499
5	6.60	70	6.60	70	8.46	1015	6.75	95	7.75	485
6	6.56	64	6.93	132	8.33	917	6.75	95	7.67	432
7	6.35	35	6.73	91	8.58	1109	6.85	115	7.62	402
8	6.96	140	7.06	168	8.50	1045	6.73	91	7.35	275
9	7.23	227	6.87	119	9.67	1981	6.87	119	7.42	304
10	6.96	140	6.98	145	9.54	1877	6.75	95	7.27	243
11	6.79	103	6.81	107	7.83	542	7.00	150	7.23	227
12	6.71	87	6.75	95	7.69	444	6.75	95	7.62	402
13	6.73	91	6.67	80	9.98	2229	7.00	150	7.83	542
14	6.52	58	6.81	107	8.25	857	7.25	235	7.79	513
15	6.87	119	6.67	80	8.33	917	7.25	235	7.69	444
16	6.79	103	6.71	87	8.17	797	7.02	156	7.46	322
17	6.87	119	6.58	67	8.50	1045	7.25	235	7.37	283
18	6.75	95	6.37	37	7.79	513	7.25	235	7.31	259
19	6.79	103	6.42	43	7.58	380	7.25	235	7.12	187
20	6.62	73	6.25	25	7.33	267	7.00	150	7.42	304
21	6.71	87	6.46	49	7.27	243	7.00	150	7.35	275
22	6.73	91	6.52	58	7.12	187	7.06	168	7.37	283
23	6.77	99	6.62	73	7.17	204	6.87	119	7.31	259
24	6.56	64	6.50	55	7.10	180	6.79	103	7.25	235
25	6.58	67	6.58	67	7.17	204	6.75	95	7.04	162
26	6.79	103	6.42	43	7.26	239	7.25	235	7.06	168
27	6.58	67	6.46	49	7.00	150	7.69	444	7.08	174
28	6.73	91	6.37	37	7.00	150	8.58	1109	6.98	145
29	6.50	55	7.83	542	6.98	145	8.75	1245	7.00	150
30	6.50	55	7.77	499	6.94	135	8.08	730	6.94	135
31	6.39	39	8.46	1015	6.94	135	.....	.....	6.98	145

Monthly Discharge of Thames River (North Branch) near Fanshaw for 1914-5

Drainage Area 650 Square Miles

Month	Discharge in Second-feet			Discharge in Second-feet per Square Mile			Run-off
	Maximum	Minimum	Mean	Maximum	Minimum	Mean	Depth in Inches on Drainage Area
November (1914).	.....	.....	.....	.....	.....	.....	.....
December ..	.....	.....	.....	.....	.....	.....	.....
January (1915).	.....	.....	.....	.....	.....	.....	.....
February .....	.....	.....	.....	.....	.....	.....	.....
March .....	.....	.....	.....	.....	.....	.....	.....
April .....	.....	.....	.....	.....	.....	.....	.....
May 12-31.....	150	39	90	.23	.06	.14	.10
June	227	35	80	.35	.05	.12	.13
July	1,015	25	133	1.56	.04	.20	.23
August	2,229	135	613	3.43	.21	.94	1.08
September	1,245	91	243	1.92	.14	.37	.41
October.....	542	135	311	.83	.21	.48	.55
The period	2,229	25	256	3.43	.04	.39	2.50

Regular Stations

SOUTH-WESTERN ONTARIO DISTRICT

Grand River and Tributaries

River	Location	Drain- age Area Sq. Miles	Township	County or District
Grand	at Belwood	280	Garafraxa	Wellington Co.....
"	at Brantford	2,000	Brantford	Brant Co.....
"	near Conestogo	550	Woolwich	Waterloo Co.....
"	at Galt	1,360	North Dumfries	"
"	at Glenmorris	1,390	South Dumfries	Brant Co
"	at York	2,280	Oneida	Haldimand Co.....
Boston Creek	near York	125	"	"
Conestogo	at St. Jacob's	305	Woolwich	Waterloo Co.....
Fairchild's Creek ...	near Onondaga	115	Onondaga	Brant Co
Galt Creek	at Galt	45	North Dumfries	Waterloo Co
Irvine	near Salem	67	Nicol	Wellington Co.....
Nith	near Canning	365	Blenheim	Oxford Co
Speed	near Guelph	77	Guelph	Wellington Co
"	at Hespeler	250	Waterloo	Waterloo Co.....
Whiteman's Creek ..	near Burford	154	Brantford	Brant Co.....

Grand River at Belwood

Location—At the bridge in the Village of Belwood, on the 7th concession, Township of Garafraxa, County of Wellington.

Records Available—August 31, 1913, to October 31, 1915.

Drainage Area—280 square miles.

Gauge—Vertical staff 0 to 12 feet on right abutment. Elevation of zero on gauge is 1366.00, which has remained unchanged since established.

Channel and Control—The channel is straight for about 400 feet above and 600 feet below gauging section. The channel bed at the bridge is solid rock, and permanent at all stages. At the permanent low water section, however, the channel is shifting under high water conditions.

Winter Flow—During the winter months the relation of gauge height to discharge is greatly affected by ice, and readings are taken to determine the winter discharge.

Accuracy—The river stage at this section is not affected by any power plants above or below. The rating curve is well defined, and estimates are considered good.

Observer—Lloyd Mosure, Belwood P.O.

Discharge Measurements of Grand River at Belwood in 1915

Date	Hydrographer	Width in Feet	Area of Section in Sq. Feet	Mean Velocity in Feet per Sec.	Gauge Height in Feet	Discharge in Sec-Feet	Discharge in Second-feet per Square Mile
Feb. 16....	Roberts, E.	83	72	1.29	1,368.16	93 (a)	.....
Mar. 25....	"	110	626	2.30	1,369.66	1,441 (b)	.....
" 25....	"	110	626	2.27	1,369.66	1,422 (b)	.....
Apr. 13....	"	110	571	1.89	1,369.12	1,076 (b)	.....
" 13....	"	110	571	1.84	1,369.10	1,049	.....
May 27....	"	64	32	1.25	1,367.21	39	.....
June 18....	"	68	29	1.10	1,367.16	33	.....
July 12....	"	63	29	1.31	1,367.17	38	.....
" 12....	"	63	29	1.31	1,367.17	39	.....
Aug. 11....	"	70	67	2.50	1,367.61	168	.....
" 11....	"	110	399	0.38	1,367.62	155 (b)	.....
" 27....	"	65	47	1.95	1,367.37	92	.....
" 27....	"	65	48	1.95	1,367.37	93	.....
Sept. 7....	"	70	73	3.01	1,367.73	220	.....
Oct. 5....	"	94	110	3.22	1,368.25	354	.....

(a) Ice measurement.

(b) Measurement made at bridge.

Daily Gauge Height and Discharge of Grand River at Belwood for 1914-5

Drainage Area, 280 Square Miles

Date	November		December		January		February		March		April		May		June		July		August		September		October	
	November		December		January		February		March		April		May		June		July		August		September		October	
	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge
	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.
1	1367.08	18	1368.50	665	1367.42	57	1367.92	77	1368.71	665	1368.08	393	1367.50	120	1367.08	18	1366.92	6	1367.08	18	1367.39	87	1367.81	245
2	1367.08	18	1368.46	639	1367.42	57	1367.92	77	1368.66	645	1368.02	357	1367.46	106	1367.08	18	1366.83	4	1367.48	18	1367.33	72	1368.04	369
3	1367.12	23	1368.35	567	1367.42	57	1367.92	77	1368.66	645	1368.02	357	1367.46	106	1367.08	18	1366.83	4	1367.48	102	1367.29	63	1368.56	704
4	1367.12	23	1367.98	334	1367.39	53	1367.92	77	1368.64	639	1368.31	541	1367.25	55	1367.08	18	1367.04	14	1369.08	1042	1367.25	55	1368.29	528
5	1367.12	23	1367.52	127	1367.37	51	1367.92	77	1368.62	633	1368.85	892	1367.25	55	1367.04	14	1367.17	30	1368.33	554	1367.23	51	1368.17	450
6	1367.08	10	1367.83	255	1367.37	51	1367.66	105	1368.58	626	1368.92	938	1367.25	55	1367.04	14	1367.12	23	1368.23	489	1367.44	102	1368.25	502
7	1367.08	18	1367.50	120	1367.66	105	1367.66	105	1368.54	606	1370.04	1688	1367.33	72	1367.25	55	1367.42	96	1368.29	528	1367.69	191	1368.04	369
8	1367.08	18	1368.00	217	1367.66	105	1367.66	105	1368.54	606	1370.04	1688	1367.33	72	1367.25	55	1367.42	96	1368.29	528	1367.67	191	1368.04	369
9	1367.08	10	1367.85	155	1367.66	105	1367.66	105	1368.50	587	1370.12	1744	1367.33	72	1367.25	55	1367.42	96	1368.29	528	1367.67	191	1368.04	369
10	1367.04	14	1367.75	90	1367.66	105	1367.66	105	1368.50	587	1370.12	1744	1367.33	72	1367.25	55	1367.42	96	1368.29	528	1367.67	191	1368.04	369
11	1367.04	14	1367.56	45	1367.66	105	1367.66	105	1368.50	587	1370.12	1744	1367.33	72	1367.25	55	1367.42	96	1368.29	528	1367.67	191	1368.04	369
12	1367.08	18	1367.37	23	1367.66	105	1367.66	105	1368.50	587	1370.12	1744	1367.33	72	1367.25	55	1367.42	96	1368.29	528	1367.67	191	1368.04	369
13	1367.18	18	1367.25	20	1367.58	77	1367.87	51	1368.50	581	1369.04	1016	1367.50	120	1367.08	18	1367.17	30	1368.23	489	1367.67	183	1367.58	148
14	1367.25	55	1367.25	20	1367.58	77	1367.87	51	1368.50	581	1369.04	1016	1367.50	120	1367.08	18	1367.17	30	1368.23	489	1367.67	183	1367.58	148
15	1367.35	77	1367.29	24	1367.58	77	1368.04	65	1369.20	1120	1368.37	580	1367.50	120	1367.25	55	1367.08	18	1368.21	476	1368.42	613	1367.89	285
16	1367.85	265	1367.29	24	1367.58	77	1368.16	96	1369.76	1492	1368.25	502	1367.46	108	1367.21	55	1367.08	18	1368.04	369	1368.08	393	1367.77	226
17	1367.75	217	1367.20	15	1367.58	77	1368.16	96	1369.62	1394	1368.12	418	1367.25	55	1367.12	23	1367.08	18	1367.58	148	1368.60	730	1367.62	163
18	1367.46	108	1367.31	20	1367.71	105	1368.16	96	1369.58	1367	1367.96	323	1367.25	55	1367.12	23	1367.08	18	1367.58	148	1368.60	730	1367.62	163
19	1367.50	120	1367.35	45	1367.71	105	1368.00	77	1369.58	1367	1367.83	255	1367.25	55	1367.17	26	1367.33	72	1367.52	127	1368.27	515	1367.79	235
20	1367.42	96	1367.46	55	1367.68	99	1368.02	90	1369.77	1499	1367.83	255	1367.25	55	1367.14	26	1367.33	72	1367.52	127	1368.27	515	1367.79	235
21	1367.33	72	1367.42	55	1367.68	99	1368.00	85	1369.66	1422	1367.67	183	1367.17	50	1367.08	18	1367.25	55	1367.33	72	1367.83	255	1367.64	171
22	1367.42	55	1367.46	55	1367.71	96	1368.00	95	1369.61	1321	1367.58	148	1367.25	55	1367.08	18	1367.25	55	1367.35	72	1367.83	255	1367.64	171
23	1367.42	49	1367.42	51	1367.71	90	1368.04	99	1369.78	1506	1367.58	148	1367.25	55	1367.08	18	1367.25	55	1367.35	72	1367.83	255	1367.64	171
24	1367.42	49	1367.42	51	1367.73	80	1368.79	437	1369.54	1341	1367.58	148	1367.25	55	1367.08	18	1367.25	55	1367.35	72	1367.83	255	1367.64	171
25	1367.42	49	1367.42	51	1367.75	70	1369.29	925	1369.79	1513	1367.50	120	1367.25	55	1367.08	18	1367.25	55	1367.35	72	1367.83	255	1367.64	171
26	1367.44	49	1367.33	27	1367.75	70	1368.92	730	1369.46	1289	1367.50	120	1367.25	55	1367.08	18	1367.25	55	1367.35	72	1367.83	255	1367.64	171
27	1367.96	155	1367.35	45	1367.75	65	1369.00	795	1369.08	1042	1368.29	528	1367.25	55	1367.08	18	1367.25	55	1367.35	72	1367.83	255	1367.64	171
28	1368.29	65	1367.39	51	1367.75	61	1368.71	665	1368.83	879	1367.79	235	1367.25	55	1366.96	8	1367.19	33	1367.33	72	1368.21	476	1367.33	72
29	1367.92	301	1367.42	55	1367.75	57	.....	.....	1368.50	665	1367.58	148	1367.25	55	1366.96	8	1367.19	33	1367.33	72	1368.21	476	1367.33	72
30	1367.92	301	1367.42	57	1367.75	55	.....	.....	1368.33	554	1367.54	134	1367.10	20	1366.92	6	1367.08	18	1367.62	163	1367.96	323	1367.33	72
31	.....	.....	1367.42	57	1367.73	49	.....	.....	1368.12	418	.....	.....	1367.08	18	.....	.....	1367.08	18	1367.46	108	.....	.....	1367.33	72

NOTE.—Relation of gauge height to discharge affected by ice from Nov. 22nd to 27th, 1914, and Dec. 8th, 1914, to March 13th, 1915; discharge for the period estimated from discharge measurements, observer's notes and climatologic records.

Monthly Discharge of Grand River at Belwood for 1914-5

Drainage Area, 280 Square Miles

Month	Discharge in Second-feet			Discharge in Second-feet per Square Mile			Run-off
	Maximum	Minimum	Mean	Maximum	Minimum	Mean	Depth in Inches on Drainage Area
November. (1914)	301	10	77	1.07	.04	.27	.30
December . "	665	15	130	2.38	.05	.46	.53
January .. (1915)	105	49	79	.37	.17	.28	.32
February	925	24	179	3.30	.09	.64	.67
March	1,513	418	937	5.40	1.49	3.35	3.86
April	2,010	120	650	7.18	.43	2.32	2.59
May	183	18	76	.65	.06	.27	.31
June	55	6	21	.20	.02	.08	.09
July	96	4	35	.34	.01	.13	.15
August	1,042	18	279	3.72	.06	1.00	1.15
September	1,315	51	391	4.70	.18	1.40	1.56
October	704	72	225	2.51	.26	.80	.92
The year	2,010	4	257	7.18	.01	.92	12.45

Grand River at Brantford

Location—At the Toronto-Hamilton-Brantford Railway bridge in the City of Brantford, County of Brant.

Records Available—Discharge measurements from August, 1912. Daily gauge heights July 8, 1913, to October 31, 1915.

Drainage Area—2,000 square miles.

Gauge—Vertical staff, 0 to 12 feet on left abutment. Elevation of zero on gauge is 643.00, which has remained unchanged since established.

Channel and Control—The bed is not shifting under ordinary conditions. The channel above has been narrowed considerably by the building of the Lake Erie & Northern Railway right-of-way. Directly below section a bridge for this same railway is now built that has four piers, the back water from which is quite apparent. During the freshet, ice is liable to jam at this point.

Discharge Measurements—Made from the bridge at all stages.

Winter Flow—The relation of gauge height to discharge is seriously affected by ice, and measurements are made to determine the winter flow.

Regulation—The Western Counties Electric Company have a dam 1,000 feet above this section that does not cause fluctuations that are noticeable in the river stage. Their plant is not running at its full capacity.

Diversions—The Western Counties Electric Company use about 50 second feet for power purposes.

Accuracy—With the exception of a slight angle at section these records can be classified as good. The back water caused through the construction work of the Lake Erie & Northern Railway bridge, 150 feet below this section, necessitated the use of more than one curve.

Observer—John Anguish, Brantford.

Discharge Measurement of Grand River at Brantford in 1915

Date	Hydrographer	Width in Feet	Area of Section in Sq. Feet	Mean Velocity in Feet per Sec.	Gauge Height in Feet	Discharge in Sec-Feet	Discharge in Second-feet per Square Mile
Jan. 16....	Roberts, E	330	416	1.73	645.34	723 (a)	.....
" 25....	"	330	443	1.90	645.52	744 (a)	.....
Feb. 11....	"	330	450	1.74	645.92	783 (a)	.....
" 19....	"	420	924	2.17	646.73	2,006 (a)	.....
" 22....	"	390	785	2.02	646.25	1,590 (a)	.....
" 27....	"	281	1,671	3.14	647.83	5,257 (b)	.....
Mar. 1....	"	281	1,475	2.46	647.16	3,633 (b)	.....
" 9....	"	281	1,089	1.71	645.76	1,864	.....
" 18....	"	366	1,929	3.14	647.83	6,067	.....
" 19....	"	371	1,781	2.87	647.46	5,111	.....
" 20....	"	371	1,707	2.76	647.25	4,705	.....
April 10....	"	373	2,311	3.59	648.83	8,303	.....
" 12....	"	373	2,534	3.78	649.37	9,571	.....
" 15....	"	281	1,315	2.68	646.65	3,522	.....
May 3....	"	281	959	1.08	645.19	1,037	.....
June 2....	"	238	794	0.59	644.76	467 (c)	.....
" 4....	"	278	868	0.79	645.06	688	.....
" 17....	"	278	935	1.11	645.23	1,050	.....
" 25....	"	238	773	0.60	644.71	532	.....
" 30....	"	238	768	0.49	644.64	375	.....
July 15....	"	238	791	0.81	644.79	645	.....
Aug. 2....	"	278	936	0.87	645.23	821	.....
" 3....	"	278	926	0.87	645.20	814	.....
" 4....	"	281	1,322	1.90	646.69	2,539	.....
" 5....	"	373	2,366	3.05	649.01	7,237	.....
" 21....	"	364	1,057	0.85	645.42	902	.....
Sept. 3....	"	363	1,006	0.84	645.35	847	.....
" 24....	"	363	1,081	0.99	645.48	1,073	.....
Oct. 16....	"	365	1,419	1.65	646.46	2,343	.....

(a) Ice measurement 100 feet above regular section.

(b) Abutment under construction at bridge immediately below which is piled up with ice.

(c) Construction work 150 feet downstream affecting gauge.

Daily Gauge Height and Discharge of Grand River at Brantford for 1914-5

Drainage Area, 2,000 Square Miles

November			December			January			February			March			April			May			June			July			August			September			October		
Day	Gauge Ht.	Dis-charge	Feet	Gauge Ht.	Dis-charge	Feet	Gauge Ht.	Dis-charge	Feet	Gauge Ht.	Dis-charge	Feet	Gauge Ht.	Dis-charge	Feet	Gauge Ht.	Dis-charge	Feet	Gauge Ht.	Dis-charge	Feet	Gauge Ht.	Dis-charge	Feet	Gauge Ht.	Dis-charge	Feet	Gauge Ht.	Dis-charge	Feet	Gauge Ht.	Dis-charge	Feet		
	Sec.-ft.	Sec.-ft.		Sec.-ft.	Sec.-ft.		Sec.-ft.	Sec.-ft.		Sec.-ft.	Sec.-ft.		Sec.-ft.	Sec.-ft.		Sec.-ft.	Sec.-ft.		Sec.-ft.	Sec.-ft.		Sec.-ft.	Sec.-ft.		Sec.-ft.	Sec.-ft.		Sec.-ft.	Sec.-ft.		Sec.-ft.	Sec.-ft.		Sec.-ft.	Sec.-ft.
1	644.50	370		645.60	1660	644.94	410	645.58	600	647.25	3740	646.14	2528	645.29	1197	644.71	560	644.06	208	645.33	920	645.52	1122	645.92	1596										
2	644.50	370		646.27	2756	645.04	480	645.64	700	646.83	3300	645.92	2172	645.29	1197	644.69	540	644.31	265	645.14	736	645.33	920	645.96	1648										
3	644.50	370		646.29	2792	645.04	450	645.66	710	646.50	2905	645.96	2236	645.21	1093	644.83	680	644.48	358	645.14	736	645.33	920	645.96	1648										
4	644.46	346		645.98	2268	645.10	426	645.75	730	646.33	2579	645.87	2082	645.04	894	644.75	600	644.39	305	645.04	652	645.12	736	645.96	1648										
5	644.50	370		645.58	1628	645.08	434	645.83	750	646.00	2300	646.25	2720	645.00	850	644.77	620	644.71	560	648.87	7104	645.00	620	646.69	2793										
6	644.50	370		645.29	1197	645.14	450	645.87	770	646.00	2300	647.00	4200	645.00	850	644.71	560	644.73	580	647.79	4820	645.00	620	646.69	2793										
7	644.54	402		645.04	894	645.29	550	645.89	790	645.83	2028	647.50	5250	644.98	830	644.79	640	644.77	620	647.79	4820	645.12	718	646.25	2070										
8	644.33	275		644.87	720	645.46	750	645.92	800	645.66	1756	648.12	6586	645.06	916	644.96	810	644.96	810	647.15	3562	645.69	1318	646.00	1700										
9	644.46	346		644.87	720	645.50	800	645.83	800	645.71	1836	648.12	7300	645.42	1380	645.75	600	645.21	1093	647.08	3456	646.08	1812	645.71	1392										
10	644.42	322		644.71	560	645.37	680	645.87	800	645.75	1900	648.92	8550	645.42	1380	645.39	1336	645.29	1197	646.62	2674	645.96	1648	645.62	1234										
11	644.48	358		644.87	720	645.54	883	645.92	800	645.75	1900	649.92	11160	645.37	1308	645.17	1044	644.98	830	646.12	1870	645.58	1188	645.52	1122										
12	644.50	370		644.75	600	645.50	800	645.87	800	645.94	2204	649.37	9675	645.21	1093	644.94	790	644.92	770	645.98	1674	645.46	1056	645.50	1100										
13	644.56	418		644.79	640	645.46	730	645.87	800	646.10	2460	648.04	6402	645.10	960	644.94	790	644.77	620	648.50	6290	648.00	5240	645.39	980										
14	644.54	402		644.66	510	645.46	730	645.92	850	646.18	2596	647.17	4557	645.10	960	645.04	894	644.79	640	648.92	7214	650.08	9800	645.42	1012										
15	644.58	434		644.46	346	645.46	720	646.16	1020	646.89	3980	646.50	3200	645.02	872	644.94	790	644.81	660	647.42	4080	648.14	5520	646.04	1756										
16	644.75	600		644.55	410	645.39	730	646.42	1280	647.81	5901	646.29	2792	645.06	916	645.02	872	644.71	560	645.94	1622	646.71	2827	645.85	1510										
17	645.20	1080		644.60	450	645.35	800	646.54	1580	647.87	6027	646.04	2364	644.96	810	645.21	1093	644.62	470	646.33	2198	646.44	2374	646.00	2262										
18	645.18	1056		644.65	500	645.39	850	646.75	2060	647.79	5859	645.92	2172	644.92	770	645.18	1056	644.60	450	645.94	1622	646.71	2827	645.85	1510										
19	644.98	830		644.68	530	645.42	872	646.71	2012	647.54	5334	645.79	1964	644.89	740	645.00	850	644.73	580	645.94	1622	646.71	2827	645.85	1510										
20	644.87	720		644.62	470	645.39	850	646.52	1820	647.42	5082	645.58	1628	644.83	680	644.87	720	644.56	418	645.39	980	646.27	2102	645.77	1414										
21	644.75	600		644.66	510	645.44	750	646.31	1660	647.42	5082	645.42	1380	644.77	620	644.94	790	644.46	346	645.50	1100	645.94	1622	645.79	1438										
22	644.83	680		644.70	550	645.42	650	646.16	1612	647.33	4893	645.29	1197	644.89	740	644.98	830	644.71	560	645.42	1012	645.73	1366	645.62	1234										
23	644.85	700		644.65	500	645.35	550	646.20	1660	647.08	4368	645.21	1093	644.81	660	644.92	770	644.81	660	645.69	1318	645.37	960	645.35	940										
24	644.83	680		644.71	560	645.46	650	646.71	2460	647.58	5418	645.21	1093	644.83	680	644.92	770	644.81	660	645.69	1318	645.37	960	645.35	940										
25	644.75	600		644.66	510	645.54	750	647.66	4200	648.71	8025	645.17	1044	644.83	680	644.72	570	644.71	560	645.58	1188	645.27	860	645.25	840										
26	644.83	680		644.58	434	645.52	750	648.50	6310	648.71	8025	645.19	1068	644.85	700	644.71	560	644.75	600	646.10	1840	645.33	920	645.25	840										
27	644.87	720		644.58	434	645.54	750	647.83	4830	647.83	5943	645.25	1145	644.96	810	644.50	370	644.71	560	646.00	1700	646.87	3099	645.17	763										
28	645.20	1080		644.65	500	645.54	700	647.12	3600	647.20	4620	645.25	1145	644.89	810	644.67	520	644.79	640	646.00	1700	646.87	3099	645.17	763										
29	645.60	1660		644.65	500	645.50	700	.....	.....	646.62	3440	646.04	2364	644.77	620	644.56	418	644.92	770	645.37	960	646.83	3031	645.21	800								
30	645.54	1564		644.65	500	645.37	550	.....	.....	646.12	2494	645.58	1628	644.83	680	644.39	305	645.64	1724	645.27	860	646.29	2134	645.21	800								
31	.....	.....		644.65	500	645.33	450	.....	.....	646.16	2562	.....	.....	644.87	720	.....	.....	645.79	1964	645.33	920	.....	.....	.....	.....						

NOTE.—Relation of gauge height to discharge affected by ice from Dec. 15th, 1914, to March 4th, 1915; discharges for the period computed from discharge measurements, observer's notes and climatologic records.

Monthly Discharge of Grand River at Brantford for 1914-5

Drainage Area, 2,000 Square Miles

Month	Discharge in Second-feet			Discharge in Second-feet per Square Mile.			Run-off
	Maximum	Minimum	Mean	Maximum	Minimum	Mean	Depth in Inches on Drainage Area
November (1914).	1,660	275	626	.83	.14	.31	.36
December "	2,792	346	834	1.40	.17	.42	.48
January (1915).	872	410	667	.44	.21	.33	.38
February	6,310	600	1,672	3.15	.30	.84	.87
March	8,025	1,756	3,899	4.01	.88	1.95	2.25
April	11,160	1,044	3,419	5.58	.52	1.71	1.91
May	1,380	620	882	.69	.31	.44	.51
June	1,336	305	721	.67	.15	.36	.40
July	1,964	208	679	.98	.10	.34	.39
August	7,214	620	2,359	3.61	.31	1.18	1.36
September	9,800	620	2,214	4.90	.31	1.10	1.23
October	4,160	763	1,508	2.08	.38	.75	.86
The year.....	11,160	208	1,621	5.58	.10	.81	11.00

Grand River near Conestogo

Location—At the highway bridge $\frac{1}{4}$ mile below the Village of Conestogo, Township of Woolwich, County of Waterloo.

Records Available—July 16, 1913, to October 31, 1915.

Drainage Area—550 square miles.

Gauge—Vertical staff 0 to 12 feet on the centre pier of bridge. Elevation of zero is 1017.00.

Channel and Control—The channel is straight for about 300 feet above and below the gauging section. The banks are low and liable to overflow. The bed is composed of gravel, and all the water is confined between the abutments of the bridge, except at a very serious flood. In flood stages the banks and bed are liable to shift.

Discharge Measurements—Made from the bridge during high water, and at a permanent low water section located 600 feet upstream during the low water period.

Winter Flow—The relation of gauge height to discharge is seriously affected by ice during the winter season, and measurements are made to determine the winter flow.

Accuracy—The slight shifting of the channel has little affect. The rating curve is well defined, and records are good.

Observer—E. Schinbein, Conestogo.

Discharge Measurements of Grand River near Conestogo in 1915

Date	Hydrographer	Width in Feet	Area of Section in Sq. Feet	Mean Velocity in Feet per Sec.	Gauge Height in Feet	Discharge in Sec-Feet	Discharge in Second-feet per Square Mile
Feb. 17....	Roberts, E.	153	181	1.47	1,019.75	266 (a)	.....
Mar. 26....	"	243	733	2.95	1,020.92	2,163 (b)	.....
Apr. 12....	"	251	834	3.10	1,021.25	2,587 (b)	.....
" 12....	"	251	834	3.15	1,021.33	2,628 (b)	.....
May 27....	"	130	85	1.01	1,018.21	85	.....
" 27....	"	130	84	1.02	1,018.21	86	.....
June 18....	"	130	105	1.35	1,018.43	142	.....
July 13....	"	136	151	2.05	1,018.76	311	.....
Aug. 12....	"	236	567	2.30	1,020.29	1,309	.....
" 27....	"	130	155	1.90	1,018.77	297	.....
" 27....	"	130	156	1.93	1,018.77	302	.....
Sept. 9....	"	148	221	2.69	1,019.35	596	.....
" 9....	"	149	222	2.60	1,019.35	589	.....
Oct. 5....	"	228	468	2.02	1,019.75	943	.....

(a) Ice measurement.

(b) Measurement at bridge section.

Daily Gauge Height and Discharge of Grand River near Conestogo for 1914-5

Drainage Area, 550 Square Miles

November			December			January			February			March			April			May			June			July			August			September			October																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
Day	Gauge Ht.		Dis-charge	Feet	Sec.-ft.	Gauge Ht.	Dis-charge	Feet	Sec.-ft.	Gauge Ht.	Dis-charge	Feet	Sec.-ft.	Gauge Ht.	Dis-charge	Feet	Sec.-ft.	Gauge Ht.	Dis-charge	Feet	Sec.-ft.	Gauge Ht.	Dis-charge	Feet	Sec.-ft.	Gauge Ht.	Dis-charge	Feet	Sec.-ft.	Gauge Ht.	Dis-charge	Feet	Sec.-ft.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														

Monthly Discharge of Grand River near Conestogo for 1914-5

Drainage Area 550 Square Miles.

Month	Discharge in Second-feet			Discharge in Second-feet per Square Mile			Run-off
	Maximum	Minimum	Mean	Maximum	Minimum	Mean	Depth in inches on Drainage Area
November (1914)	535	27	153	.97	.05	.28	.31
December.. ..	981	33	217	1.78	.06	.39	.45
January. . (1915)	150	64	98	.27	.12	.18	.21
February	2,295	86	426	4.17	.16	.77	.80
March.....	3,445	556	1,443	6.26	1.01	2.62	3.02
April.....	4,204	218	1,163	7.64	.40	2.11	2.35
May.....	340	58	167	.62	.11	.30	.35
June.	762	30	102	1.39	.05	.19	.21
July.....	286	37	99	.52	.07	.18	.21
August.....	3,399	66	765	6.18	.12	1.39	1.60
September	4,928	75	846	8.96	.14	1.53	1.71
October.....	1,533	82	494	2.79	.15	.90	1.04
The year ...	4,928	27	498	8.96	.05	.91	12.26

Grand River at Galt

Location—At the Concession Street bridge, in the City of Galt, Township of North Dumfries, County of Waterloo.

Records Available—July 21, 1913, to October 31, 1915.

Drainage Area—1,360 square miles.

Gauge—Vertical staff 0 to 12 feet on first left pier of the bridge. Elevation of zero on gauge 851.00, which has remained unchanged since established.

Channel and Control—The channel is straight for 1,000 feet above and below the section. The bed is solid rock formation. Residents each year encroach on the natural channel by building up the banks to protect their lots from washing away.

Discharge Measurements—Made from bridge for high stages, and at a permanent wading section 150 feet upstream during low stages.

Winter Flow—Ice slightly affects the relation of gauge height to discharge during the winter, and measurements are made to determine the winter flow. The open-water rating curve is applicable.

Regulation—This section is subject to serious fluctuations in the river stage caused by the operation of the Galt dam situated $\frac{1}{4}$ mile above.

Accuracy—The rating curve is fairly well defined, and records are good.

Observer—Charles Parker, Galt.

Discharge Measurements of Grand River at Galt in 1915

Date	Hydrographer	Width in Feet	Area of Section in Sq. Feet	Mean Velocity in Feet per Sec.	Gauge Height in Feet	Discharge in Sec-Feet	Discharge in Second-feet per Square Mile
Jan. 2....	Roberts, E.	142	233	1.01	852.29	234 (a)	.....
" 2....	"	142	313	1.04	852.66	325 (a)	.....
Feb. 9....	"	142	286	1.45	852.75	415 (a)	.....
" 27....	"	200	1,053	2.06	854.96	2,170	.....
" 27....	"	200	1,053	2.12	855.00	2,231	.....
Mar. 3....	"	191	749	1.74	854.00	1,303	.....
" 4....	"	191	735	1.66	853.93	1,218	.....
" 16....	"	206	1,273	3.14	856.37	4,004	.....
" 18....	"	206	1,206	2.97	855.96	3,586	.....
" 18....	"	206	1,206	2.95	855.96	3,553	.....
Apr. 13....	"	206	1,168	3.14	856.14	3,666	.....
" 14....	"	200	928	2.28	854.92	2,118	.....
May 8....	"	186	619	0.90	852.97	559	.....
" 21....	"	145	257	1.41	852.40	361 (b)	.....
June 7....	"	139	215	1.04	852.12	224 (b)	.....
July 6....	"	142	251	1.33	852.43	335 (b)	.....
" 6....	"	142	263	1.50	852.52	398 (b)	.....
Aug. 31....	"	189	746	0.94	853.27	702	.....
" 31....	"	189	755	0.99	853.30	754	.....
Sept. 23....	"	189	774	1.04	853.42	808	.....
" 23....	"	189	774	1.07	853.41	823	.....
Oct. 15....	"	196	984	1.62	854.53	1,594	.....

(a) Ice measurement at low water section, river open in centre.
(b) Measurement made at permanent low water wading section.

Daily Gauge Height and Discharge of Grand River at Galt for 1914-5

Drainage Area 1,360 Square Miles

Day	November		December		January		February		March		April		May		June		July		August		September		October	
	Gauge	Dis-	Gauge	Dis-	Gauge	Dis-	Gauge	Dis-	Gauge	Dis-	Gauge	Dis-	Gauge	Dis-	Gauge	Dis-	Gauge	Dis-	Gauge	Dis-	Gauge	Dis-	Gauge	Dis-
	Ht.	charge	Ht.	charge	Ht.	charge	Ht.	charge	Ht.	charge	Ht.	charge	Ht.	charge	Ht.	charge	Ht.	charge	Ht.	charge	Ht.	charge	Ht.	charge
	Feet	Sec-ft.	Feet	Sec-ft.	Feet	Sec-ft.	Feet	Sec-ft.	Feet	Sec-ft.	Feet	Sec-ft.	Feet	Sec-ft.	Feet	Sec-ft.	Feet	Sec-ft.	Feet	Sec-ft.	Feet	Sec-ft.	Feet	Sec-ft.
1	852.00	190	853.82	1200	852.18	216	852.54	296	854.81	2052	854.12	1418	853.10	670	852.14	198	851.88	146	852.73	448	853.31	796	853.79	1112
2	852.02	197	854.42	1670	852.21	223	852.83	448	854.29	1581	853.94	1266	852.96	586	852.16	202	852.00	170	852.58	360	853.06	646	853.96	1274
3	852.10	220	854.20	1490	852.18	216	852.87	472	854.12	1418	853.84	1156	852.92	562	852.19	208	851.94	158	852.60	370	852.82	502	855.33	2626
4	852.12	228	853.82	1220	852.33	259	852.83	448	853.98	1201	853.96	1274	852.86	526	852.18	208	851.92	154	855.92	2386	852.60	370	854.79	2030
5	852.19	250	853.39	900	852.41	284	852.68	360	853.73	1074	854.92	2172	852.79	484	852.16	202	852.28	244	856.27	3868	852.56	350	854.39	1661
6	852.08	215	852.79	505	852.31	253	852.64	340	853.70	1050	855.37	2674	852.75	496	851.96	162	852.48	312	855.48	241	852.71	436	854.21	1499
7	852.12	228	852.56	315	852.56	350	852.64	340	853.52	924	855.94	2412	852.81	496	852.14	198	852.54	336	855.21	2492	853.29	784	854.08	1382
8	851.98	185	852.50	370	852.57	355	852.73	388	853.41	856	857.04	5004	852.96	586	852.44	296	852.69	415	855.08	2348	853.92	1238	853.77	1106
9	851.96	180	852.24	267	852.60	370	852.75	400	853.34	814	857.77	6290	853.31	796	853.48	898	853.32	802	854.87	2117	854.17	1463	853.52	924
10	852.15	238	852.22	260	852.56	350	852.73	388	853.28	778	858.02	6804	853.30	790	852.87	532	852.99	604	854.35	1625	853.74	1082	853.39	844
11	852.19	250	852.33	300	852.71	436	852.69	365	853.44	874	858.92	8926	853.24	754	852.67	412	852.56	344	853.81	1139	853.35	820	853.35	820
12	852.23	265	852.42	335	852.73	448	852.77	412	853.64	1008	857.29	5413	853.03	628	852.38	274	852.51	325	854.12	1418	853.12	682	853.28	778
13	852.35	305	852.33	300	853.00	610	853.06	586	853.31	1139	856.00	3490	852.94	574	852.33	259	852.57	355	856.62	4370	858.87	8789	853.08	658
14	852.34	303	852.37	315	852.64	394	853.12	682	854.18	1472	855.50	1760	852.77	472	852.32	256	852.47	308	855.12	2392	855.83	3269	854.37	1643
15	852.64	432	852.42	335	852.87	532	853.05	640	854.96	2216	854.50	3750	852.66	350	852.60	370	852.45	265	856.39	4036	857.75	6250	853.24	754
16	853.04	647	852.45	350	852.82	535	853.13	628	855.89	2347	854.18	1472	852.56	350	852.62	370	852.35	265	854.46	1724	854.79	2030	854.00	1310
17	852.44	905	852.32	295	852.39	277	853.26	706	856.02	3518	854.08	1382	852.56	380	852.72	442	852.24	232	853.90	1220	854.35	1025	853.73	1074
18	852.44	590	852.27	277	852.54	340	853.33	748	855.85	3295	853.98	1292	852.56	350	852.60	370	852.08	186	853.63	1001	855.12	2392	853.52	924
19	852.60	412	852.25	270	852.52	330	853.27	712	855.60	2970	853.67	1029	852.46	304	852.42	288	852.18	206	853.30	790	854.44	1706	853.44	874
20	852.50	370	852.04	202	852.56	304	853.20	670	855.50	2840	853.48	898	852.47	308	852.26	238	852.15	200	853.06	646	854.10	1400	853.62	994
21	852.42	335	852.23	265	852.55	300	853.10	610	855.62	2996	853.31	796	852.49	316	852.31	253	852.32	256	852.85	520	853.77	1106	853.49	904
22	852.48	360	852.29	285	852.57	308	853.08	598	855.31	2602	853.10	670	852.50	250	852.26	238	852.47	308	852.31	253	853.54	938	853.29	784
23	852.42	335	852.28	285	852.54	296	853.16	646	855.14	2414	853.06	646	852.34	262	852.19	208	852.68	418	852.33	259	853.35	820	853.18	718
24	852.50	370	852.28	282	852.56	304	853.85	1190	856.27	3868	853.05	640	852.34	262	852.18	206	852.49	241	852.33	259	853.21	736	852.97	592
25	852.48	360	852.04	202	852.71	376	853.77	1029	856.37	670	853.10	670	852.37	271	852.07	184	852.27	241	852.44	296	853.10	670	852.88	538
26	852.62	420	852.12	226	852.59	316	855.54	2892	856.82	4670	853.05	634	852.46	304	852.00	170	852.39	277	852.96	586	853.36	826	852.89	544
27	852.72	470	852.27	277	852.50	280	855.04	2304	855.87	3321	853.04	634	852.47	308	851.82	134	852.40	280	852.42	288	856.62	4370	852.77	472
28	853.34	835	852.31	294	852.53	292	855.03	2260	855.20	2480	853.96	1274	852.38	278	852.07	184	852.67	412	852.12	194	855.44	2762	852.77	472
29	853.56	1025	825.35	307	852.58	312	.....	.....	854.64	1886	853.83	1157	852.26	238	851.97	164	853.17	712	852.87	532	854.54	1796	852.56	350
30	853.47	930	852.37	315	852.62	330	.....	.....	854.37	1643	853.30	790	852.19	208	851.97	164	853.55	945	853.02	622	854.10	1400	852.62	382
31	.....	.....	852.44	345	852.54	296	.....	.....	854.30	1580	.....	.....	852.12	194	.....	.....	853.28	778	853.35	820	.....	.....	852.51	325

Monthly Discharge of Grand River at Galt for 1914-5

Drainage Area, 1,360 Square Miles

Month	Discharge in Second-feet			Discharge in Second-feet per Square Mile			Run-off
	Maximum	Minimum	Mea n	Maximum	Minimum	Mean	Depth in Inches on Drainage Area
November. (1914)	1,025	180	402	.75	.13	.30	.33
December. “	1,670	202	460	1.23	.15	.34	.39
January .. (1915)	610	216	334	.45	.16	.25	.29
February.....	2,892	296	770	2.13	.22	.57	.59
March.....	5,549	778	2,179	4.08	.57	1.60	1.84
April.....	8,926	634	2,212	6.56	.47	1.63	1.82
May.....	796	194	436	.59	.14	.32	.37
June.....	898	134	272	.66	.10	.20	.22
July.....	945	146	359	.69	.11	.26	.30
August.....	4,370	194	1,361	3.21	.14	1.00	1.15
September.....	8,789	350	1,735	6.46	.26	1.28	1.43
October.....	2,626	325	980	1.93	.24	.72	.83
The year.....	8,926	134	958	6.56	.10	.70	9.56

Grand River at Glen Morris

Location—At the Glen Morris bridge, in the Village of Glen Morris, Township of South Dumfries, County of Brant.

Records Available—Discharge measurements from August, 1912. Daily gauge heights July 21, 1913, to October 31, 1915.

Drainage Area—1,390 square miles.

Gauge—Vertical staff 0 to 6 feet on a post and 6 to 12 feet on a tree on left bank. Elevation of the zero on gauge is 801.00, which has remained unchanged since established.

Channel and Control—The channel is straight for 1,000 feet above and below the section. The bed of the river is composed of gravel and boulders, and banks are permanent. The bed and control is shifting under high water conditions.

Discharge Measurements—Made from bridge during the high water stages, and at permanent wading section located 150 feet upstream during the lower water periods.

Winter Flow—This section is seriously affected by ice which usually floods, forming as many as three or four layers of ice with water between them. Measurements are made during the winter months to determine the winter flow.

Regulation—This section is subject to fluctuations in the river stage, due to the storing of water, during the night and at week ends, by the Galt dam, located eight miles above.

Accuracy—Owing to poor natural conditions, the liability of the control to shift and back water caused by ice, the records cannot be considered better than fair.

Observer—Minnie Anderson, Glen Morris P.O.

Discharge Measurements of Grand River at Glen Morris in 1915

Date	Hydrographer	Width in Feet	Area of Section in Sq. Feet	Mean Velocity in Feet per Sec.	Gauge Height in Feet	Discharge in Sec-Feet	Discharge in Second-feet per Square Mile
Jan. 4....	Roberts, E.	191	185	1.39	803.46	257 (a)	.....
" 15....	"	195	276	1.79	803.66	494 (a)	.....
Feb. 12....	"	195	269	1.49	804.16	515 (a)	.....
Mar. 17....	"	281	1,015	3.79	804.66	3,843	.....
" 19....	"	281	959	3.59	804.42	3,441	.....
" 19....	"	281	959	3.69	804.45	3,533	.....
Apr. 12....	"	281	1,325	4.29	805.51	5,690	.....
" 14....	"	281	875	3.08	804.05	2,683	.....
May 22....	"	189	252	1.79	802.50	453 (b)	.....
" 25....	"	189	249	1.77	802.47	442 (b)	.....
June 7....	"	183	190	1.30	802.04	248 (b)	.....
" 18....	"	205	270	1.78	802.54	504 (b)	.....
" 18....	"	198	274	1.75	802.54	504 (b)	.....
July 3....	"	183	203	1.26	802.29	256 (b)	.....
" 9....	"	156	429	2.10	803.03	902 (b)	.....
Aug. 4....	"	281	1,047	3.55	804.87	3,721	.....
" 25....	"	196	425	2.08	803.00	884 (b)	.....
Sept. 23....	"	271	555	1.73	803.06	961	.....
Oct. 15....	"	280	777	2.66	803.90	2,070	.....

(a) Ice measurement.

(b) Measurement made at permanent low water wading section.

Daily Gauge Height and Discharge of Grand River at Glen Morris for 1914-5
Drainage Area, 1,390 Square Miles

Day	November		December		January		February		March		April		May		June		July		August		September		October			
	Gauge Ht. Feet	Dis- charge Sec-ft.	Gauge Ht. Feet	Dis- charge Sec-ft.	Gauge Ht. Feet	Dis- charge Sec-ft.	Gauge Ht. Feet	Dis- charge Sec-ft.	Gauge Ht. Feet	Dis- charge Sec-ft.	Gauge Ht. Feet	Dis- charge Sec-ft.	Gauge Ht. Feet	Dis- charge Sec-ft.	Gauge Ht. Feet	Dis- charge Sec-ft.	Gauge Ht. Feet	Dis- charge Sec-ft.	Gauge Ht. Feet	Dis- charge Sec-ft.	Gauge Ht. Feet	Dis- charge Sec-ft.				
1	802.29	335	803.37	680	803.27	225	803.71	500	.....	.....	.....	.....	1446	802.81	700	802.23	312	802.04	236	802.39	385	802.96	850	803.60	1670	
2	802.35	365	804.00	710	803.31	230	803.62	500	.....	.....	.....	.....	1291	802.75	645	802.27	328	802.10	260	802.48	438	803.04	934	803.62	1698	
3	802.31	345	803.77	790	803.29	235	803.68	500	.....	.....	.....	.....	1178	802.69	592	802.19	296	802.14	276	802.58	506	803.14	1044	803.64	1726	
4	802.41	395	803.54	1050	803.42	240	803.60	500	.....	.....	.....	.....	1299	802.64	552	802.10	260	802.08	252	804.56	3336	803.60	520	804.29	2791	
5	802.35	365	803.23	1085	803.39	255	803.68	500	.....	.....	.....	.....	2215	802.64	552	802.19	296	802.17	288	805.29	4928	802.54	478	804.23	2677	
6	802.31	345	803.00	950	803.35	270	804.10	500	.....	.....	.....	.....	2727	802.62	536	802.21	304	802.39	385	804.46	3130	802.60	520	803.06	956	
7	802.33	355	802.50	890	803.60	290	804.14	500	.....	.....	.....	.....	2970	802.64	552	802.23	312	802.52	464	804.35	2910	802.83	720	803.10	1011	
8	802.33	355	802.54	790	803.56	310	804.16	500	.....	.....	.....	.....	5109	802.69	592	802.27	328	802.56	492	804.14	2512	803.29	1269	803.17	1077	
9	802.33	365	802.56	720	803.52	340	804.10	510	.....	.....	.....	.....	6425	802.94	830	803.10	1000	802.98	870	804.14	2512	803.56	1614	803.79	1945	
10	802.35	365	802.60	635	803.60	405	804.14	510	.....	.....	.....	.....	6940	802.98	870	802.77	663	802.75	645	804.23	2677	803.23	1206	803.00	890	
11	802.44	415	802.68	575	803.60	455	804.10	515	.....	.....	.....	.....	9104	803.00	890	802.60	520	802.60	520	805.08	4466	803.04	934	802.85	740	
12	802.35	365	802.75	530	803.52	475	804.12	515	.....	.....	.....	.....	5521	802.85	740	802.79	681	802.52	464	805.54	5482	802.81	700	802.98	870	
13	802.39	385	802.71	490	803.62	485	804.14	598	.....	.....	.....	.....	804.90	802.77	663	802.19	296	802.44	414	804.71	3652	802.75	9500	803.17	1077	
14	802.44	415	802.83	450	803.62	490	804.20	696	.....	.....	.....	.....	804.19	2592	802.77	663	802.23	312	802.36	370	805.58	5574	805.71	5885	803.06	956
15	802.62	530	803.04	420	803.62	495	804.29	653	.....	.....	.....	.....	803.78	1930	802.67	576	802.31	345	802.27	328	804.08	2406	804.81	3872	803.10	1000
16	802.87	802	803.06	385	803.56	495	804.40	640	.....	.....	.....	.....	803.44	1452	802.58	506	802.52	464	802.23	312	803.71	1825	804.71	3652	803.04	934
17	803.20	1170	802.98	360	803.60	495	804.52	720	.....	.....	.....	.....	803.32	1304	802.52	464	802.56	492	802.27	328	803.23	1206	803.83	2005	802.94	830
18	803.12	1020	803.98	340	803.68	495	804.50	757	.....	.....	.....	.....	803.28	1258	802.54	478	802.48	438	802.23	312	803.14	1044	802.96	850	802.85	740
19	802.27	330	803.00	320	803.64	495	804.56	726	.....	.....	.....	.....	803.11	1011	802.48	438	802.44	414	802.14	276	802.96	850	803.21	1181	802.94	830
20	802.62	535	803.12	290	803.79	495	804.64	683	.....	.....	.....	.....	803.01	901	802.46	426	802.39	385	802.10	260	802.77	663	803.14	1044	802.81	700
21	802.54	480	803.10	290	803.81	495	804.56	622	.....	.....	.....	.....	802.98	870	802.39	385	802.31	345	802.17	288	802.73	627	803.06	956	802.69	592
22	802.50	450	803.20	280	803.71	495	804.54	610	.....	.....	.....	.....	802.89	780	802.39	385	802.27	328	802.19	296	802.81	700	802.94	830	802.77	663
23	802.56	490	803.18	265	803.64	495	804.36	659	.....	.....	.....	.....	802.81	700	802.37	375	802.23	312	802.52	464	802.77	663	802.81	700	802.69	592
24	802.60	520	803.20	255	803.68	495	804.64	1213	.....	.....	.....	.....	802.77	663	802.39	385	802.19	296	802.44	414	802.87	760	802.69	592	802.64	552
25	802.60	520	803.27	250	803.68	495	804.83	1050	.....	.....	.....	.....	802.81	700	802.44	414	802.10	260	802.44	414	803.00	890	802.75	645	802.73	627
26	802.54	480	803.27	240	803.68	495	.....	.....	.....	.....	.....	.....	802.77	663	802.39	385	802.14	276	802.35	365	803.37	1364	803.19	1099	802.69	592
27	802.77	665	803.27	235	803.64	495	.....	.....	.....	.....	.....	.....	802.81	700	802.46	426	802.12	268	802.31	345	803.14	1044	805.29	4928	802.60	520
28	803.23	1205	803.27	235	803.68	495	.....	.....	.....	.....	.....	.....	803.31	1292	802.36	370	802.14	276	802.48	438	802.96	850	804.69	3609	802.69	592
29	803.27	1250	803.31	230	803.64	495	.....	.....	.....	.....	.....	.....	803.42	1426	802.35	365	802.16	260	802.64	552	802.85	740	804.71	3652	802.56	492
30	803.23	1205	803.35	225	803.68	495	.....	.....	.....	.....	.....	.....	802.98	870	802.31	345	802.10	260	802.85	740	802.94	830	804.69	3609	802.60	520
31	.....	.....	803.31	225	803.68	495	.....	.....	.....	.....	.....	.....	.....	.....	802.35	365	.....	.....	802.94	836	802.89	780	.....	.....	802.50	450

NOTE.—Relation of gauge height to discharge affected by ice from Dec. 1st, 1914, to Feb. 28th, 1915; discharges for period computed from climatologic records. Discharge measurements and observer's reports.

Monthly Discharge of Grand River at Glen Morris for 1914-5

Drainage Area, 1,390 Square Miles

Month	Discharge in Second-feet			Drainage in Second-feet per Square Mile			Run-off
	Maximum	Minimum	Mean	Maximum	Minimum	Mean	Depth in Inches on Drainage Area
November (1914)	1,250	335	559	.90	.24	.40	.45
December.. "	1,085	225	490	.78	.16	.35	.40
January .. (1915)	490	225	423	.35	.16	.30	.35
February	2,949	500	832	2.12	.36	.60	.62
March.....	.....	.....	.....	.....	.....	.....	.....
April.....	9,104	663	2,313	6.55	.48	1.66	1.85
May.....	890	345	531	.64	.25	.38	.44
June	1,000	260	378	.72	.19	.27	.30
July	870	236	416	.63	.17	.30	.35
August	5,574	385	1,927	4.01	.28	1.39	1.60
September	9,500	478	1,980	6.83	.34	1.48	1.58
October.....	2,791	450	1,010	2.01	.32	.73	.84
The period	9,500	225	985	6.83	.16	.71	8.78

Grand River at York

Location—At the highway bridge in the Village of York, Township of Oneida, County of Haldimand.

Records Available—June 25, 1913, to October 31, 1915.

Drainage Area—2,280 square miles.

Gauge—Vertical staff 0 to 5 feet on the first pier from left abutment and 6 to 12 feet on the left abutment. The elevation of zero is 593.00, and has remained unchanged since established.

Channel and Control—The flow is confined between the abutments of the bridge at all stages. The bed of the river is well protected, but shifting during flood stages. A partly demolished dam about 200 feet downstream affects flow, especially at low stages. Part of this old dam is washed out at each flood period.

Discharge Measurements—Taken from the highway bridge, and at a permanent low water section located 800 feet above during the low water period.

Floods—No floods of a serious nature have occurred here since the spring of 1912, when the dam below the bridge was wrecked, the water cutting around the right abutment, greatly increasing the width of the channel. Village residents state the water rose to a gauge height of 606 feet, which would mean approximately 100,000 second feet.

Winter Flow—The relation of gauge height to discharge is seriously affected by ice, and measurements are made to determine the winter flow.

Regulation—The nearest dam is at Caledonia, five miles above. The intermittent operation of the mills causes daily fluctuations in the gauge heights.

Accuracy—The conditions of flow are good, except for the fluctuations caused through the Caledonia Mills. Well-defined rating curves have been established, and the records can be considered good. Semi-daily gauge heights will not give a good representative mean. The storage capacity of the Caledonia Mills is large and its operation at various hours through the day is liable to pass section at York during the night, and thus escape the attention of the recorder who reads it daily.

Observer—Stanley Brown, York P.O.

Discharge Measurements of Grand River at York in 1915.

Date	Hydrographer	Width in Feet	Area of Section in Sq. Feet	Mean Velocity in Feet per Sec.	Gauge Height in Feet	Discharge in Sec-Feet	Discharge in Second-feet per Square Mile
Jan. 18....	Roberts, E.	305	543	1.66	594.36	906 (a)	.....
Feb. 5....	" "	314	457	1.60	594.56	734 (a)	.....
" 5....	" "	314	457	1.60	594.56	733 (a)	.....
Mar. 22....	" "	376	2,042	2.42	596.33	4,953	.....
" 22....	" "	376	2,043	2.41	596.33	4,917	.....
" 23....	" "	376	1,945	2.13	596.12	4,162	.....
" 25....	" "	386	2,236	3.14	596.85	7,030	.....
Apr. 1....	" "	366	1,674	1.56	595.39	2,618	.....
" 1....	" "	366	1,674	1.61	595.42	2,694	.....
" 7....	" "	376	1,971	2.13	596.08	4,205	.....
" 7....	" "	376	1,971	2.15	596.16	4,239	.....
" 9....	" "	378	2,288	3.00	597.00	6,848	.....
" 9....	" "	378	2,327	3.01	597.05	6,993	.....
" 10....	" "	378	2,327	3.26	597.08	7,601	.....
" 10....	" "	378	2,326	3.24	597.08	7,550	.....
" 12....	" "	379	2,631	4.11	597.83	10,824	.....
" 12....	" "	379	2,517	3.78	597.50	9,524	.....
" 16....	" "	366	1,738	1.59	595.50	2,774	.....
May 29....	" "	279	435	1.47	593.73	641	.....
June 11....	" "	313	674	1.69	594.00	1,141	.....
" 29....	" "	276	387	1.33	593.58	514	.....
" 29....	" "	276	383	1.28	593.58	491	.....
July 12....	" "	309	520	1.56	594.01	812	.....
" 13....	" "	288	469	1.45	593.85	681	.....
" 13....	" "	289	487	1.50	593.91	731	.....
" 23....	" "	278	398	1.38	593.67	553	.....
" 28....	" "	278	409	1.32	593.69	542	.....
Aug. 23....	" "	345	1,353	1.00	594.52	1,332	.....
" 23....	" "	345	1,353	0.96	594.52	1,292	.....
Sept. 2....	" "	340	1,336	0.93	594.43	1,249	.....
" 22....	" "	343	1,417	1.22	594.70	1,723	.....
" 22....	" "	343	1,417	1.19	594.70	1,689	.....
Oct. 23....	" "	340	1,352	0.97	594.47	1,313	.....

(a) Ice Measurement.

Daily Gauge Height and Discharge of Grand River at York for 1914-5

Drainage Area, 2,280 Square Miles

Day	November		December		January		February		March		April		May		June		July		August		September		October	
	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge
	Feet	Sec-ft.	Feet	Sec-ft.	Feet	Sec-ft.	Feet	Sec-ft.	Feet	Sec-ft.	Feet	Sec-ft.	Feet	Sec-ft.	Feet	Sec-ft.	Feet	Sec-ft.	Feet	Sec-ft.	Feet	Sec-ft.	Feet	Sec-ft.
1	593.46	376	594.83	1759	593.68	630	594.27	685	596.71	4260	595.27	2444	594.46	1296	593.50	400	593.27	278	594.46	1296	594.37	1197	594.96	1934
2	593.54	428	595.27	2419	593.77	635	594.25	800	596.29	3760	595.10	2140	594.17	990	593.56	442	593.23	262	594.39	1219	594.44	1274	594.83	1759
3	593.56	442	595.53	2857	593.79	640	594.32	800	596.20	3300	595.08	2110	594.04	860	593.56	442	593.31	295	594.44	1274	594.23	1050	595.71	3231
4	593.60	470	595.31	2488	593.71	645	594.35	825	596.06	2940	594.96	1934	594.19	1030	593.46	442	593.17	241	594.79	1707	594.17	990	596.04	4012
5	593.58	456	594.66	1538	593.71	645	594.29	855	596.26	2620	594.96	1878	594.19	1010	593.48	388	593.56	442	597.17	7880	593.98	801	595.67	3153
6	593.52	414	594.54	1388	593.83	650	594.31	880	595.54	2635	594.92	1878	594.17	990	593.46	376	593.39	335	596.75	6200	593.94	763	595.54	2906
7	593.58	456	594.54	1388	594.23	660	594.35	890	595.00	2710	596.25	3489	594.19	1010	593.48	442	593.56	442	596.42	5060	594.04	860	595.29	2453
8	593.56	442	594.46	1296	594.29	670	594.29	935	595.00	2710	596.25	3489	594.19	1010	593.48	442	593.56	442	596.00	3900	594.29	1110	595.04	2050
9	593.54	428	594.27	1090	594.29	686	594.33	935	595.08	2780	597.08	7520	594.27	1090	594.17	990	594.12	940	595.94	3750	594.79	1707	594.81	1733
10	593.50	400	594.00	615	594.33	690	594.37	935	596.08	2855	597.16	7840	594.50	1340	594.37	1197	594.19	1010	595.62	3058	594.96	1934	594.67	1551
11	593.50	400	593.96	615	594.39	715	594.44	935	595.20	2945	597.58	9900	594.44	1274	594.12	940	594.04	860	545.46	2758	594.62	1486	594.50	1340
12	593.56	442	593.85	615	594.39	730	594.48	935	595.29	3050	597.67	10350	594.35	1175	593.96	782	593.98	801	595.04	2050	594.44	1274	594.46	1296
13	593.62	486	593.81	615	594.35	820	594.44	970	596.04	3310	596.25	6880	594.12	940	593.87	698	593.85	680	595.83	3489	594.37	1197	594.39	1219
14	593.64	502	593.78	620	594.35	840	594.44	970	596.04	3310	596.25	6880	594.12	940	593.87	698	593.85	680	597.29	8450	597.83	11180	594.35	1175
15	593.68	536	593.92	625	594.39	855	595.29	1160	596.25	3450	595.83	3489	594.16	980	593.75	592	593.75	592	596.54	5440	597.08	7520	594.46	1296
16	593.81	644	594.12	625	594.27	875	596.04	1460	596.87	3615	595.42	2686	593.96	782	593.73	575	593.75	592	595.75	3315	596.21	4477	595.29	2453
17	593.25	1070	594.62	640	594.25	890	596.04	1800	597.50	3800	594.75	1655	594.04	860	593.79	626	593.77	610	595.35	2590	595.50	2830	595.04	2050
18	594.50	1340	594.44	360	594.27	905	595.96	2350	596.75	4000	594.08	900	594.00	820	593.94	763	593.52	414	595.27	2419	595.35	2560	594.79	1707
19	594.46	1296	594.35	660	594.31	905	595.87	2320	596.62	4216	594.21	1030	594.00	820	593.98	801	593.37	325	594.62	1486	595.69	3191	594.62	1486
20	594.42	1252	594.42	670	594.31	905	595.89	2570	596.52	4425	594.14	960	593.94	763	593.64	502	593.44	364	594.46	1296	595.27	2419	594.52	1364
21	594.37	1197	594.18	660	594.27	900	595.62	1890	596.20	4425	594.10	920	593.81	644	593.64	502	593.39	335	594.44	1274	594.33	1153	594.62	1486
22	594.08	900	594.18	660	594.23	895	595.54	1840	596.37	4425	593.96	782	593.79	626	593.50	592	593.50	440	594.35	1131	594.69	1577	594.56	1412
23	594.20	1020	594.04	660	594.23	890	595.62	1890	596.20	4450	593.92	744	593.75	626	593.69	542	593.56	440	594.25	1070	594.54	1388	594.45	1285
24	594.12	940	594.10	650	594.23	880	595.62	2800	596.14	4290	593.90	725	593.58	456	593.58	456	593.60	470	594.64	1512	594.35	1175	594.33	1153
25	594.10	920	593.92	640	594.17	870	597.08	4890	596.92	6880	593.83	662	593.56	442	593.46	376	593.54	428	594.67	1551	594.25	1070	594.27	1090
26	594.08	900	593.79	640	594.19	855	597.75	7200	596.96	7040	593.75	692	593.75	592	593.29	286	593.56	442	594.58	1436	594.35	1175	594.19	1010
27	594.20	1020	593.85	635	594.27	840	597.29	5500	596.58	5590	593.54	428	593.75	592	593.08	214	593.60	470	595.00	1990	594.35	1175	594.14	960
28	594.25	1070	593.68	630	594.21	830	596.83	4100	596.33	5000	593.79	626	593.79	626	593.17	241	593.54	428	594.62	1486	596.50	5300	593.94	763
29	594.71	1603	593.66	630	594.18	815	.....	.....	595.92	3700	593.92	744	593.62	486	593.44	364	593.75	592	594.33	1153	596.00	3900	593.85	680
30	594.75	1655	593.73	620	594.20	805	.....	.....	595.58	2980	594.29	1110	593.62	486	593.31	295	593.92	744	594.37	1197	595.42	2686	593.81	644
31	.....	.....	593.68	630	594.27	790	.....	.....	595.54	2900	.....	.....	593.52	414	.....	.....	594.67	1551	594.25	1070	.....	.....	593.92	744

NOTE.—Relation of gauge height to discharge affected by ice from Dec. 10th, 1914, to March 31st, 1915; climatologic records, discharge measurements and observer's notes.

discharge for period computed from

Monthly Discharge of Grand River at York for 1914-5

Drainage Area, 2,280 Square Miles

Month	Discharge in Second-feet			Discharge in Second-feet per Square Mile			Run-off
	Maximum	Minimum	Mean	Maximum	Minimum	Mean	Depth in Inches on Drainage Area
November (1914)	1,655	376	783	.73	.16	.34	.38
December "	2,857	615	976	1.25	.27	.43	.50
January (1915)	905	630	788	.40	.28	.35	.40
February	7,200	685	1,928	3.16	.30	.85	.88
March	7,040	2,620	3,805	3.09	1.15	1.67	1.93
April	10,350	428	4,050	4.54	.18	1.78	1.99
May	1,340	414	838	.59	.18	.37	.43
June	1,197	214	554	.52	.09	.24	.27
July	1,551	241	545	.68	.11	.24	.28
August	8,450	1,070	2,694	3.71	.47	1.18	1.36
September	11,180	763	2,347	4.90	.33	1.03	1.15
October	4,012	644	1,658	1.76	.28	.73	.84
The year	11,180	214	1,743	4.90	.09	.76	10.41

Boston Creek near York

Location—At the second highway bridge known as Anderson's Bridge, above the junction with the Grand River, between Concessions 5 and 6, Township of Oneida, County of Haldimand.

Records Available—June 23, 1913, to May 31, 1915, at first highway bridge. June 1 to October 31, 1915, at Anderson's Bridge.

Drainage Area—125 square miles.

Gauge—Vertical staff 0 to 9 feet, attached to downstream side of left abutment. Elevation of zero on gauge is 600.00.

Channel and Control—The channel is straight for 400 feet above and below the gauging section. The river bed is composed of slab rock and is not shifting under normal conditions. The flow passes between the two abutments of the bridge at all stages.

Discharge Measurements—Made from the bridge during freshet stages and from a permanent wading section 100 feet above, during the low water period.

Winter Flow—Relation of gauge height to discharge is affected by ice and measurements are made to determine the winter flow.

Accuracy—Records previous to June 1st, 1915, are not very reliable on account of being affected by backwater from the Grand River. Subsequent results are fair.

Observer—H. J. Anderson, Caledonia.

Discharge Measurements of Boston Creek near York in 1915

Date	Hydrographer	Width in Feet	Area of Section in Sq. Feet	Mean Velocity in Feet per Sec.	Gauge Height in Feet	Discharge in Sec-Feet	Discharge in Second-feet per Square Mile
Jan. 19....	Roberts, E	65	92	.83	593.33	76 (a)	.....
Feb. 5....	"	67	49	.82	593.60	40 (a)	.....
" 5....	"	67	49	.82	593.60	40 (a)	.....
Mar. 22....	"	79	280	.61	594.50	169 (b)	.....
" 23....	"	79	260	.70	594.25	183 (b)	.....
Apr. 1....	"	79	181	.51	593.25	93 (b)	.....
" 7....	"	79	252	.38	594.16	96 (b)	.....

(a) Ice jammed from Grand River to gauging station.

(b) Backwater from Grand River.

Discharge Measurements of Boston Creek near York (Anderson's Bridge) in 1915

Date	Hydrographer	Width in Feet	Area of Section in Sq. Feet	Mean Velocity in Feet per Sec.	Gauge Height in Feet	Discharge in Sec-Feet	Discharge in Second-feet per Square Mile
May 29....	Roberts, E	43	19	1.13	600.73	22	.....
June 11....	"	42	20	1.30	600.75	26	.....
" 11....	"	42	21	1.36	600.75	29	.....
" 28....	"	41	15	0.86	600.67	13	.....
" 29....	"	41	14	0.92	600.67	13	.....
July 12....	"	42	26	1.30	600.89	34	.....
" 12....	"	41	26	1.46	600.87	38	.....
Aug. 23....	"	42	20	1.11	600.87	22	.....
" 23....	"	42	20	1.54	600.79	31	.....
" 23....	"	42	21	1.46	600.79	30	.....
Sept 22....	"	42	18	0.88	600.73	16	.....
" 22....	"	42	19	0.97	600.73	19	.....
" 22....	"	42	20	0.81	600.73	16	.....
" 22....	"	42	19	0.85	600.73	16	.....
Oct. 23....	"	42	22	0.82	600.77	18	.....

Daily Gauge Height and Discharge of Boston Creek near York for 1914-5

Drainage Area, 125 Square Miles

Date	November		December		January		February		March		April		May		June		July		August		September		October	
	Gauge Ht.		Dis-charge		Gauge Ht.		Dis-charge		Gauge Ht.		Dis-charge		Gauge Ht.		Dis-charge		Gauge Ht.		Dis-charge		Gauge Ht.		Dis-charge	
	Feet	Sec-ft.	Feet	Sec-ft.	Feet	Sec-ft.	Feet	Sec-ft.	Feet	Sec-ft.	Feet	Sec-ft.	Feet	Sec-ft.	Feet	Sec-ft.	Feet	Sec-ft.	Feet	Sec-ft.	Feet	Sec-ft.	Feet	Sec-ft.
1	592.06	12	592.92	82	592.71	26	593.46	56	595.25	375	593.44	146	592.71	61	600.67	14	600.58	6	600.67	14	600.83	31	600.85	33
2	592.14	16	593.16	108	592.75	28	593.54	64	594.68	261	593.27	122	592.58	48	600.67	14	600.60	7	600.92	41	600.75	22	600.85	33
3	592.14	16	593.52	158	592.66	23	593.58	68	594.39	204	593.16	101	592.56	46	600.67	14	600.64	11	600.87	36	600.77	25	600.79	27
4	592.16	17	593.33	130	592.77	30	593.58	68	594.06	149	593.10	101	592.56	46	600.69	16	600.67	14	602.33	201	600.79	27	600.83	31
5	592.14	16	593.12	103	592.75	28	593.64	54	593.83	117	593.18	111	592.56	46	600.67	14	600.75	22	602.83	258	600.79	27	600.83	31
6	592.14	16	592.89	79	592.85	36	593.83	70	593.46	76	593.16	217	592.52	48	600.71	18	600.75	22	602.12	177	600.75	22	600.85	33
7	592.18	18	592.75	65	593.50	90	594.00	90	593.33	72	594.60	365	592.62	52	600.75	22	600.83	31	601.71	131	600.75	22	600.87	36
8	592.10	14	592.48	38	593.60	101	594.04	94	593.43	63	594.16	279	592.58	48	600.75	22	600.83	31	601.46	103	600.75	22	600.87	36
9	592.12	15	592.35	28	593.52	92	594.04	90	593.39	69	595.18	484	592.77	67	600.73	20	600.92	41	601.58	117	600.73	20	600.92	41
10	592.12	15	592.29	24	593.39	79	594.00	90	593.46	76	595.42	440	592.77	67	600.73	20	600.87	36	601.46	103	600.71	18	600.92	41
11	592.12	15	592.46	37	593.39	79	594.08	99	593.56	86	596.12	722	592.81	71	600.73	20	600.87	36	601.37	93	600.75	22	600.87	36
12	592.14	16	592.46	37	593.39	79	594.46	149	593.92	129	596.25	760	592.77	67	600.75	22	600.87	36	601.37	93	600.75	22	600.87	36
13	592.27	23	592.35	28	593.46	86	594.71	190	594.08	152	595.20	488	592.69	59	600.73	20	600.89	38	601.46	103	600.75	22	600.87	36
14	592.14	16	592.27	23	593.52	92	594.81	208	594.25	179	594.42	329	592.64	54	600.71	18	600.89	38	601.50	107	600.75	22	600.77	25
15	592.23	21	592.41	33	593.50	93	595.71	389	594.54	233	593.92	229	592.60	50	600.71	18	600.83	31	601.29	84	600.73	20	600.75	22
16	592.25	22	592.37	30	593.42	82	595.92	429	595.12	329	593.54	161	592.50	40	600.69	16	600.83	31	601.42	98	600.73	20	600.75	22
17	592.27	23	592.35	28	593.31	71	595.92	429	595.20	345	593.35	133	592.52	42	600.67	14	600.85	33	601.21	74	600.75	22	600.75	22
18	592.29	24	592.35	28	593.35	75	595.75	395	595.25	355	593.23	101	592.42	34	600.67	14	600.85	33	601.04	55	600.75	22	600.75	22
19	592.32	26	592.39	31	593.37	77	595.54	353	594.92	289	593.10	117	592.35	38	600.67	14	600.83	31	601.04	55	600.75	22	600.75	22
20	592.34	28	592.33	27	593.37	77	595.25	295	594.66	237	592.98	88	592.31	26	600.67	14	600.75	22	600.87	36	600.75	22	600.75	22
21	592.37	30	592.39	31	593.39	79	595.02	249	594.52	210	592.85	77	592.33	27	600.67	14	600.75	22	600.83	31	600.75	22	600.75	22
22	592.39	31	592.33	27	593.35	75	594.98	245	594.50	206	592.77	67	592.31	26	600.67	14	600.75	22	600.83	31	600.69	16	600.75	22
23	592.42	34	592.28	24	593.38	79	595.12	269	594.25	163	592.71	61	592.25	22	600.67	14	600.73	20	600.77	25	600.67	14	600.75	22
24	592.31	26	592.31	26	593.31	71	596.12	470	594.29	169	592.68	58	592.27	23	600.67	14	600.67	14	600.85	33	600.71	18	600.75	22
25	592.35	28	592.28	24	593.39	79	596.71	512	595.20	345	592.64	54	592.29	24	600.65	12	600.67	14	600.92	41	600.73	20	600.75	22
26	592.39	31	592.35	28	593.39	49	596.89	558	595.62	429	592.69	59	592.31	26	600.67	14	600.67	14	600.92	41	600.73	20	600.75	22
27	592.42	34	592.22	20	593.37	43	596.62	694	595.00	445	592.62	52	592.29	24	600.62	9	600.63	10	600.89	38	600.75	22	600.75	22
28	592.54	44	592.28	24	593.37	43	595.87	504	594.46	337	592.64	54	592.27	23	600.62	9	600.64	11	600.89	38	600.75	22	600.75	22
29	592.87	77	592.39	31	593.33	43	.....	.....	594.02	249	593.00	90	592.25	22	600.64	11	600.67	14	600.85	33	600.75	22	600.71	18
30	592.94	84	592.35	28	593.31	41	.....	.....	593.73	193	592.87	77	592.14	16	600.62	9	600.67	14	600.83	31	600.81	29	600.73	20
31	.....	.....	592.39	31	593.20	32	.....	.....	593.33	130	.....	.....	592.23	21	.....	.....	600.67	14	600.77	25	.....	.....	600.75	22

NOTE.—Relation of gauge height to discharge affected by ice and backwater from Grand River, Dec. 15th, 1914, to March 26th, 1915; discharge for the period estimated from climatologic records, discharge measurements and observer's reports.

Monthly Discharge of Boston Creek near York for 1914-5

Drainage Area, 125 Square Miles

Month	Discharge in Second-feet			Discharge in Second-feet per Square Mile			Run-off
	Maximum	Minimum	Mean	Maximum	Minimum	Mean	Depth in Inches on Drainage Area
November (1914)	84	12	26	.67	.10	.21	.23
December "	158	20	45	1.26	.16	.36	.42
January (1915)	101	23	64	.81	.18	.51	.59
February	694	54	256	5.55	.43	2.05	2.13
March	445	63	215	3.56	.50	1.72	1.98
April	760	52	205	6.08	.42	1.64	1.83
May	71	16	40	.57	.13	.32	.37
June	22	9	15	.18	.07	.12	.13
July	41	6	23	.33	.05	.18	.21
August	258	14	78	2.06	.11	.62	.71
September	31	14	22	.25	.11	.18	.20
October	41	18	26	.33	.14	.21	.24
The year	760	6	83	6.08	.05	.66	9.04

Conestogo River at St. Jacobs

Location—At the highway bridge in the Village of St. Jacobs, Township of Woolwich, County of Waterloo.

Records Available—July 16, 1913, to October 31, 1915.

Drainage Area—305 square miles.

Gauge—Vertical staff 0 to 3 feet on pile near left bank and 3 to 12 feet on the right abutment. Elev. of zero on the gauge is 1057.00, which has remained unchanged since established.

Channel and Control—The channel is straight for about 500 feet above and 1,000 feet below the gauging section. The banks are low, shifting, and liable to overflow. Fine gravel forms the bed of the stream and is not very permanent. The disposal of garbage from the bridge affects the area of the section to some extent. The channel and control has been washed out three times during the high stages this summer.

Discharge Measurements—Made from the bridge during high stages, and at a permanent wading section located 800 feet down stream during the low water period.

Winter Flow—The relation of gauge height to discharge is affected by ice during the winter season.

Regulation—The Snyder mill is located just above this bridge, and its intermittent operation causes variations in the river stage. During the dry season it is possible, when the dam is closed and flash boards on, to hold back practically all the water for a period of 24 hours.

Accuracy—The constantly changing channel and control has necessitated the use of a number of rating curves, and therefore the records cannot be considered very reliable.

Observer—A. Niebergall, St. Jacobs.

Discharge Measurements of Conestogo River at St. Jacobs in 1915

Date	Hydrographer	Width in Feet	Area of Section in Sq. Feet	Mean Velocity in Feet per Sec.	Gauge Height in Feet	Discharge in Sec-Feet	Discharge in Second-feet per Square Mile
Apr. 12....	Roberts, E.	170	881	1.76	1,060.45	1,555	.....
Apr. 12....	"	171	881	1.80	1,060.46	1,591	.....
May 27....	"	62	31	1.09	1,057.92	34	.....
June 18....	"	60	39	1.05	1,058.00	41	.....
July 13....	"	37	18	1.00	1,057.66	18	.....
Aug. 12....	"	161	637	0.88	1,059.52	564	.....
" 27....	"	91	79	2.57	1,058.58	204	.....
Sept. 9....	"	157	210	1.70	1,059.00	357	.....
Oct. 5....	"	134	120	2.86	1,059.00	343	.....

Monthly Discharge of Conestogo River at St. Jacobs for 1914-5

Drainage Area 305 Square Miles

Month	Discharge in Second-feet			Discharge in Second-feet per Square Mile			Run-off
	Maximum	Minimum	Mean	Maximum	Minimum	Mean	Depth in Inches on Drainage Area
November (1914)	397	5	87	1.30	.01	.29	.32
December. "	494	2	94	1.62	.01	.31	.36
January .. (1915)	133	6	56	.44	.02	.18	.21
February	3,182	77	579	10.43	.25	1.90	1.98
March	4,202	358	1,437	13.78	1.17	4.71	5.43
April	3,146	82	709	10.31	.27	2.32	2.59
May	161	18	65	.53	.06	.21	.24
June	55	6	18	.18	.02	.06	.07
July	155	5	37	.51	.02	.18	.21
August	1,898	40	354	6.22	.13	1.16	1.34
September	4,370	28	548	14.32	.09	1.80	2.01
October	990	59	229	3.25	.19	.75	.86
The year.....	4,370	2	349	14.32	.01	1.14	15.62

Fairchild's Creek near Onondaga

Location—At the highway bridge called Howell's Bridge, lot 16, concession 3, Township of Onondaga, County of Brant.

Records Available—June 28, 1913, to October 31, 1915.

Drainage Area—115 square miles.

Gauge—Vertical staff 0 to 12 feet on left abutment of bridge. Elevation of zero is 621.00.

Channel and Control—Clay and silt decidedly shifting. This section is affected by Grand River backwater during the freshet period.

Discharge Measurements—Made from the bridge at all stages.

Winter Flow—The relation of gauge height to discharge is affected by ice, and measurements are made to determine the winter discharge.

Accuracy—The records for low flows are good. There are not sufficient records available to define rating curve at intermediate and high stages.

Observer—Gertrude Ludlow, Cainsville P.O.

Discharge Measurements of Fairchild's Creek near Onondaga in 1915

Date	Hydrographer	Width in Feet	Area of Section in Sq. Feet	Mean Velocity in Feet per Sec.	Gauge Height in Feet	Discharge in Sec-Feet	Discharge in Second-feet per Square Mile
Jan. 6....	Roberts, E.	45	12	1.03	622.04	12 (a)	.....
" 13....	"	48	40	1.08	622.25	44 (b)	.....
" 13....	"	48	40	0.92	622.25	37 (b)	.....
" 13....	"	48	40	1.07	622.25	43 (b)	.....
" 13....	"	48	40	0.92	622.25	37 (b)	.....
" 13....	"	48	40	1.13	622.25	46 (b)	.....
Feb. 13....	"	48	80	1.77	623.58	140 (a)	.....
Mar. 13....	"	48	119	1.96	623.96	234 (c)	.....
April 9....	"	47	47	2.19	622.46	103	.....
May 9....	"	46	34	1.12	622.14	38	.....
June 2....	"	45	19	0.56	621.83	11	.....
July 2....	"	45	15	0.57	621.76	8	.....
" 16....	"	45	17	0.52	621.75	10	.....
" 16....	"	45	17	0.58	621.75	10	.....
" 17....	"	45	16	0.56	621.75	9	.....
" 17....	"	45	17	0.52	621.75	9	.....
Aug. 7....	"	47	55	2.23	622.58	123	.....
" 7....	"	47	55	2.20	622.58	122	.....
" 30....	"	45	27	1.03	622.00	28	.....
" 30....	"	45	27	1.03	622.00	28	.....
" 30....	"	45	27	0.92	622.00	25	.....
Sept. 25....	"	45	28	0.90	622.02	26	.....
Oct. 8....	"	48	58	2.37	622.67	136	.....

(a) Ice measurement.

(b) Ice jam cleared.

(c) Backwater from ice on bank affecting gauge.

Daily Gauge Height and Discharge of Fairchild's Creek near Onondaga for 1914-5

Drainage Area 115 Square Miles

Day	November		December		January		February		March		April		May		June		July		August		September		October	
	Gauge Ht.	Dis- charge	Gauge Ht.	Dis- charge	Gauge Ht.	Dis- charge	Gauge Ht.	Dis- charge	Gauge Ht.	Dis- charge	Gauge Ht.	Dis- charge	Gauge Ht.	Dis- charge	Gauge Ht.	Dis- charge	Gauge Ht.	Dis- charge	Gauge Ht.	Dis- charge	Gauge Ht.	Dis- charge	Gauge Ht.	Dis- charge
	Feet	Sec-ft.	Feet	Sec-ft.	Feet	Sec-ft.	Feet	Sec-ft.	Feet	Sec-ft.	Feet	Sec-ft.	Feet	Sec-ft.	Feet	Sec-ft.	Feet	Sec-ft.	Feet	Sec-ft.	Feet	Sec-ft.	Feet	Sec-ft.
1	622.00	22	622.18	40	622.04	18	622.33	34	624.05	252	622.50	92	622.00	22	621.92	16	621.77	9	621.85	12	622.17	39	622.17	39
2	621.94	18	622.31	57	622.00	15	622.44	47	623.79	232	622.51	57	622.00	22	621.89	14	621.77	9	621.81	10	622.08	29	622.27	51
3	621.94	18	622.52	96	621.92	11	622.62	77	623.54	222	622.28	52	621.98	21	621.83	11	621.85	11	621.81	10	622.04	26	622.60	112
4	621.96	19	622.51	94	622.00	15	622.63	79	623.25	184	622.27	51	621.98	21	621.88	14	621.85	11	621.81	22	622.00	26	622.58	108
5	621.96	19	622.39	71	622.02	17	622.74	100	623.04	170	622.28	52	622.01	23	621.88	14	621.87	13	623.21	234	621.96	19	622.71	134
6	621.94	18	622.33	60	622.02	17	622.81	114	622.92	152	622.42	77	622.05	26	621.79	9	621.96	19	622.83	158	621.96	19	622.46	284
7	621.96	19	622.25	48	622.14	18	622.89	110	622.73	138	622.48	88	622.00	22	621.77	9	621.87	13	622.57	106	622.06	27	623.00	192
8	621.92	16	622.23	46	622.16	19	622.94	120	622.60	116	622.48	84	622.04	26	621.81	10	621.85	12	622.53	98	622.10	31	622.71	134
9	621.92	16	622.08	29	622.18	21	622.92	116	622.54	100	622.46	84	622.08	29	621.92	16	621.98	21	622.59	170	622.09	30	622.54	100
10	621.92	16	622.02	24	622.27	28	622.89	110	622.75	142	622.52	94	622.17	39	621.81	10	621.94	18	622.62	116	622.08	29	622.36	66
11	621.94	18	622.23	46	622.25	26	622.81	94	624.25	228	623.46	94	622.12	33	621.83	11	621.87	13	622.52	96	622.02	24	622.31	57
12	621.94	18	622.12	33	622.24	26	622.96	124	624.20	226	623.49	90	622.12	33	621.82	11	621.83	11	622.60	112	622.08	29	622.28	52
13	621.98	21	622.08	29	622.24	26	623.50	132	623.96	232	622.64	120	622.08	29	621.81	10	621.83	11	622.92	176	623.92	376	622.23	46
14	621.94	18	622.00	22	622.12	33	623.60	136	624.44	312	622.50	92	622.03	25	621.79	10	621.82	11	622.92	176	623.92	376	622.23	46
15	622.02	24	622.04	26	622.02	24	624.37	212	625.31	472	622.38	69	622.00	22	621.81	10	621.79	10	622.54	100	622.75	142	622.33	60
16	622.08	29	621.92	16	622.00	22	625.00	432	625.54	524	622.31	57	622.05	26	621.85	12	621.79	9	622.44	81	622.44	81	622.43	79
17	622.29	54	621.92	16	622.01	23	624.96	392	624.94	418	622.29	54	622.05	26	621.89	14	621.79	9	622.34	62	622.35	64	622.37	68
18	622.25	48	621.83	11	622.06	19	624.64	328	624.56	352	622.27	51	622.05	26	621.81	10	621.79	8	622.48	88	622.29	54	622.31	51
19	622.23	46	621.83	11	622.11	23	624.31	256	623.52	296	622.23	46	622.00	22	621.77	9	621.76	8	622.37	68	622.23	46	622.29	54
20	622.08	29	621.83	11	622.18	21	623.92	176	623.66	324	622.18	40	622.00	22	621.77	9	621.75	8	622.23	46	622.17	39	622.25	48
21	622.04	26	621.89	14	622.18	21	623.73	132	623.49	290	622.12	33	621.98	21	621.75	8	621.75	8	622.17	39	622.14	35	622.22	45
22	622.04	26	621.85	12	622.16	19	623.96	176	623.12	216	622.04	26	621.96	19	621.77	8	621.83	11	622.12	33	622.12	33	622.20	42
23	622.04	26	621.89	14	622.15	18	624.42	232	623.09	210	622.06	27	621.96	19	621.77	8	621.90	15	622.14	35	622.06	27	622.17	39
24	621.98	21	621.92	16	622.12	17	627.35	482	623.48	288	622.08	29	621.94	18	621.75	8	621.81	10	622.19	41	622.00	22	622.12	33
25	622.00	22	621.89	14	622.20	17	628.68	752	623.18	228	622.12	33	621.87	13	621.77	8	621.79	10	622.17	39	622.00	22	622.10	31
26	622.04	26	621.96	19	622.14	18	627.83	672	623.31	254	622.08	29	621.94	18	621.75	8	621.77	9	622.14	35	622.04	26	622.08	29
27	622.12	33	621.94	18	622.12	17	626.38	584	622.75	142	622.05	25	621.88	14	621.77	8	621.75	8	622.08	29	622.31	57	622.08	29
28	622.12	33	621.92	16	622.12	17	624.92	472	622.56	104	622.03	26	621.88	14	621.77	8	621.79	10	622.04	26	622.44	81	622.08	29
29	622.23	46	621.95	18	622.15	18	.....	.....	622.54	100	622.00	22	621.83	11	621.75	7	621.87	13	622.00	22	622.34	46	622.06	27
30	622.20	42	621.92	16	622.20	22	.....	.....	622.31	57	622.01	23	621.83	11	621.75	8	622.04	26	622.14	35	622.23	46	622.08	27
31	.....	.....	621.95	18	622.25	26	.....	.....	622.41	75	.....	.....	621.85	12	.....	.....	621.92	16	622.27	51	.....	.....	622.12	33

NOTE.—Relation of gauge height to discharge affected by ice from Jan. 1st to March 18th, 1915; discharges for the period computed from discharge measurements, observer's notes and climatologic records.

Monthly Discharge of Fairchild's Creek near Onondaga for 1914-5

Drainage Area, 115 Square Miles

Month	Discharge in Second-feet			Discharge in Second-feet per Square Mile			Run-off
	Maximum	Minimum	Mean	Maximum	Minimum	Mean	Depth in Inches on Drainage Area
November (1914)	54	16	26	.47	.14	.23	.26
December ..	96	11	31	.83	.10	.27	.31
January.. (1915)	28	11	21	.24	.10	.18	.21
February	752	34	239	6.53	.30	2.08	2.16
March	524	57	227	4.55	.49	1.97	2.27
April	120	22	57	1.04	.19	.50	.56
May	39	11	22	.34	.10	.19	.22
June	16	7	10	.14	.06	.09	.10
July	26	8	12	.23	.07	.10	.12
August	250	10	80	2.17	.09	.70	.81
September	376	19	52	3.27	.17	.45	.50
October	284	27	71	2.47	.23	.62	.71
The year	752	7	70	6.53	.06	.61	8.23

Galt Creek at Galt

Location—At the Kerr Street Bridge in the City of Galt, Township of North Dumfries, County of Waterloo.

Records Available—July 9, 1913, to October 31, 1915.

Drainage Area—45 square miles.

Gauge—Vertical staff 0 to 9 feet on the right abutment of bridge. Elevation of zero on gauge is 893.00, which has remained unchanged since established.

Channel and Control—The channel is straight for 500 feet above and below section. The river bed and banks are both practically permanent. It is bounded on both sides by the G.T.R. and C.P.R.

Discharge Measurements—Made from the upstream side of the bridge at all stages.

Winter Flow—The relation of gauge height to discharge is affected by ice during the winter months, and measurements are made to determine the winter flow.

Accuracy—The rating curve is fairly well defined, and the records can be classed as good.

Observer—Charles Parker, Galt.

Discharge measurements of Galt Creek at Galt in 1915

Date	Hydrographer	Width in Feet	Area of Section in Sq. Feet	Mean Velocity in Feet per Sec.	Gauge Height in Feet	Discharge in Sec-Feet	Discharge in Second-feet per Square Mile
Jan. 2....	Roberts, E.	24	16	1.51	893.75	24 (a)	.....
" 26....	"	24	26	0.86	893.66	22 (a)	.....
Feb. 9....	"	24	22	1.23	893.66	28 (a)	.....
" 27....	"	24	24	2.09	894.66	51 (a)	.....
Apr. 14....	"	24	29	2.33	893.89	67	.....
" 14....	"	24	29	2.33	893.89	67	.....
June 7....	"	24	23	1.43	893.52	32	.....
July 8....	"	24	22	1.27	893.60	28	.....
" 8....	"	24	22	1.27	893.60	28	.....
" 8....	"	24	22	1.36	893.62	30	.....
Aug. 26....	"	24	19	1.23	893.46	23	.....
" 26....	"	24	19	1.18	893.46	22	.....
" 31....	"	24	24	1.54	893.65	37	.....
" 31....	"	24	24	1.54	893.67	37	.....
Sept. 23....	"	24	20	1.15	893.48	23	.....
" 23....	"	24	19	1.26	893.48	24	.....
Oct. 14....	"	24	21	1.36	893.57	28	.....

(a) Ice measurement.

Daily Gauge Height and Discharge of Galt Creek at Galt for 1914-5

Drainage Area 45 Square Miles

Date	November			December			January			February			March			April			May			June			July			August			September			October		
	Gauge Ht.		Dis-charge	Gauge Ht.		Dis-charge	Gauge Ht.		Dis-charge	Gauge Ht.		Dis-charge	Gauge Ht.		Dis-charge	Gauge Ht.		Dis-charge	Gauge Ht.		Dis-charge	Gauge Ht.		Dis-charge	Gauge Ht.		Dis-charge	Gauge Ht.		Dis-charge	Gauge Ht.		Dis-charge			
	Feet	Sec-ft.		Feet	Sec-ft.		Feet	Sec-ft.		Feet	Sec-ft.		Feet	Sec-ft.		Feet	Sec-ft.		Feet	Sec-ft.		Feet	Sec-ft.		Feet	Sec-ft.		Feet	Sec-ft.		Feet	Sec-ft.		Feet	Sec-ft.	Feet
1	893.49	21	893.64	35	893.69	26	893.58	18	894.27	59	893.66	37	893.41	17	893.30	12	893.26	11	893.94	69	893.63	34	893.60	31	893.56	27	893.81	51	893.71	41	893.88	60	893.88	60	893.88	
2	893.48	21	893.74	44	893.97	40	893.60	22	894.02	50	893.62	33	893.40	16	893.36	14	893.31	12	893.64	35	893.53	25	893.96	72	893.56	27	893.51	23	893.51	23	893.51	23	893.51	23	893.51	
3	893.48	21	893.74	44	893.76	27	893.71	22	893.89	40	893.63	33	893.46	20	893.41	17	893.28	11	893.64	35	893.49	21	893.59	30	893.59	30	893.59	30	893.59	30	893.59	30	893.59	30	893.59	
4	893.46	20	893.71	41	893.91	39	893.96	35	893.79	39	893.77	47	893.40	16	893.39	16	893.44	18	894.35	139	893.46	20	893.89	62	893.56	27	893.51	23	893.51	23	893.51	23	893.51	23	893.51	
5	893.37	15	893.61	32	893.77	28	893.64	22	893.75	33	893.62	33	893.46	20	893.37	15	893.57	28	894.85	225	893.45	19	893.88	60	893.56	27	893.51	23	893.51	23	893.51	23	893.51	23	893.51	
6	893.38	15	893.48	21	894.02	39	893.77	22	893.62	31	893.69	39	893.44	18	893.33	13	893.52	24	894.75	211	893.45	19	893.88	60	893.56	27	893.51	23	893.51	23	893.51	23	893.51	23	893.51	
7	893.34	14	893.37	15	894.29	50	893.95	39	893.56	27	893.77	47	893.48	21	893.31	12	893.54	26	894.48	162	893.71	41	893.71	41	893.71	41	893.71	41	893.71	41	893.71	41	893.71	41	893.71	
8	893.33	13	893.66	37	894.87	78	894.00	45	893.65	35	893.81	51	893.51	23	893.36	14	893.57	28	894.19	110	893.81	51	893.56	27	893.51	23	893.51	23	893.51	23	893.51	23	893.51	23	893.51	
9	893.37	14	893.74	49	894.92	92	893.68	26	893.68	38	893.98	75	893.67	37	893.48	21	893.75	45	894.00	78	893.62	33	893.51	23	893.56	27	893.51	23	893.51	23	893.51	23	893.51	23	893.51	
10	893.39	16	893.81	51	894.56	46	893.66	27	893.66	36	894.00	78	893.65	35	893.47	20	893.59	30	893.76	46	893.56	27	893.51	23	893.56	27	893.51	23	893.51	23	893.51	23	893.51	23	893.51	
11	893.36	14	893.68	38	894.33	40	893.71	28	893.71	41	894.01	80	893.58	29	893.34	14	893.48	21	893.63	34	893.52	24	893.56	27	893.51	23	893.51	23	893.51	23	893.51	23	893.51	23	893.51	
12	893.33	13	893.68	38	894.20	31	893.85	31	893.81	51	894.04	84	893.53	25	893.34	14	893.42	17	893.73	43	893.50	22	893.56	27	893.51	23	893.51	23	893.51	23	893.51	23	893.51	23	893.51	
13	893.48	21	893.75	45	893.98	25	894.10	37	893.85	56	893.93	67	893.49	21	893.35	14	893.41	17	893.96	72	893.62	33	893.50	22	893.56	27	893.51	23	893.51	23	893.51	23	893.51	23	893.51	
14	893.51	23	893.92	66	893.64	19	894.23	46	894.04	84	893.75	43	893.44	18	893.37	14	893.50	22	893.98	75	893.69	39	893.61	32	893.56	27	893.51	23	893.51	23	893.51	23	893.51	23	893.51	
15	893.56	36	894.37	143	893.62	19	894.16	40	894.31	132	893.73	43	893.44	18	893.37	14	893.45	19	893.71	41	893.89	62	893.66	36	893.56	27	893.51	23	893.51	23	893.51	23	893.51	23	893.51	
16	893.83	54	894.25	121	893.61	18	894.20	43	894.56	177	893.54	26	893.43	17	893.35	14	893.45	19	893.71	41	893.89	62	893.66	36	893.56	27	893.51	23	893.51	23	893.51	23	893.51	23	893.51	
17	893.82	53	893.59	30	893.66	20	894.25	45	894.35	139	893.58	29	893.42	17	892.33	13	893.43	18	893.98	82	893.81	51	893.66	36	893.56	27	893.51	23	893.51	23	893.51	23	893.51	23	893.51	
18	893.66	36	893.48	21	893.71	22	894.35	56	894.12	98	893.59	30	893.45	19	892.33	13	893.43	18	893.98	82	893.81	51	893.66	36	893.56	27	893.51	23	893.51	23	893.51	23	893.51	23	893.51	
19	893.64	35	893.44	18	893.71	22	894.14	47	894.08	89	893.60	31	893.40	16	893.33	13	893.38	15	893.71	41	893.89	62	893.66	36	893.56	27	893.51	23	893.51	23	893.51	23	893.51	23	893.51	
20	894.16	105	893.40	16	893.69	22	893.81	37	894.00	78	893.58	29	893.44	18	893.33	13	893.40	16	893.98	82	893.81	51	893.66	36	893.56	27	893.51	23	893.51	23	893.51	23	893.51	23	893.51	
21	893.83	54	893.46	20	893.71	22	893.75	35	893.96	75	893.54	26	893.42	17	893.33	13	893.40	16	893.98	82	893.81	51	893.66	36	893.56	27	893.51	23	893.51	23	893.51	23	893.51	23	893.51	
22	893.48	21	893.46	20	893.64	19	893.85	37	893.85	69	893.50	22	893.44	18	893.34	14	893.45	19	893.71	41	893.89	62	893.66	36	893.56	27	893.51	23	893.51	23	893.51	23	893.51	23	893.51	
23	893.75	45	893.56	27	893.62	19	894.00	46	894.25	121	893.48	22	893.44	18	893.35	14	893.45	19	893.71	41	893.89	62	893.66	36	893.56	27	893.51	23	893.51	23	893.51	23	893.51	23	893.51	
24	893.89	62	893.58	29	893.55	16	894.48	66	893.75	45	893.51	23	893.37	15	893.31	12	893.34	14	893.43	18	893.98	82	893.81	51	893.66	36	893.56	27	893.51	23	893.51	23	893.51	23	893.51	
25	893.42	17	893.42	17	893.52	16	894.87	110	894.04	86	893.51	23	893.37	15	893.31	12	893.34	14	893.43	18	893.98	82	893.81	51	893.66	36	893.56	27	893.51	23	893.51	23	893.51	23	893.51	
26	893.44	18	893.48	21	893.48	21	893.56	16	894.87	110	894.04	86	893.51	23	893.37	15	893.31	12	893.43	18	893.98	82	893.81	51	893.66	36	893.56	27	893.51	23	893.51	23	893.51	23	893.51	
27	893.51	23	893.54	26	893.61	19	894.85	84	894.04	86	893.47	20	893.57	28	893.29	12	893.37	15	893.46	20	893.76	46	893.50	22	893.56	27	893.51	23	893.51	23	893.51	23	893.51	23	893.51	
28	893.54	26	893.53	25	893.57	17	894.71	72	893.98	75	893.52	24	893.34	14	893.26	11	893.36	14	893.46	20	893.76	46	893.50	22	893.56	27	893.51	23	893.51	23	893.51	23	893.51	23	893.51	
29	893.44	18	893.58	29	893.50	14	893.58	29	893.50	14	893.58	29	893.50	14	893.58	29	893.50	14	893.58	29	893.50	14	893.58	29	893.50	14	893.58	29	893.50	14	893.58	29	893.50	14	893.58	
30	893.51	23	893.56	27	893.60	17	893.60	17	893.60	17	893.60	17	893.60	17	893.60	17	893.60	17	893.60	17	893.60	17	893.60	17	893.60	17	893.60	17	893.60	17	893.60	17	893.60	17	893.60	
31	893.51	23	893.56	27	893.60	17	893.60	17	893.60	17	893.60	17	893.60	17	893.60	17	893.60	17	893.60	17	893.60	17	893.60	17	893.60	17	893.60	17	893.60	17	893.60	17	893.60	17	893.60	

NOTE.—Relation of gauge height to discharge affected by ice from Dec. 26th, 1914, to March 5th, 1915; discharge for period computed from climatologic records, discharge measurements and observer's reports.

Monthly Discharge of Galt Creek at Galt for 1914-5

Drainage Area. 45 Square Miles

Month	Discharge in Second-feet			Discharge in Second-feet per Square Mile			Run-off
	Maximum	Minimum	Mean	Maximum	Minimum	Mean	Depth in Inches on Drainage Area
November (1915)	105	13	29	2.33	.29	.64	.71
December. "	143	15	38	3.18	.33	.84	.97
January .. (1915)	92	12	29	2.04	.27	.64	.74
February	110	18	44	2.44	.40	.98	1.02
March.....	177	27	70	3.93	.60	1.56	1.80
April.....	84	17	38	1.87	.38	.84	.94
May.....	37	13	20	.82	.29	.44	.51
June	21	10	14	.47	.22	.30	.33
July	75	11	24	1.67	.24	.53	.61
August	225	18	58	5.00	.40	1.29	1.49
September	84	18	32	1.87	.40	.71	.79
October.....	72	17	30	1.60	.38	.67	.77
The year	225	10	36	5.00	.22	.80	10.68

Irvine River near Salem

Location—At the highway bridge known as Watt's Bridge about $1\frac{1}{2}$ miles above Salem on the blind line between the 11th and 12th concessions, lot 14, Township of Nichol, County of Wellington.

Records Available—Old section, July to October, 1913; November 1, 1913, to October 31, 1915, present section.

Drainage Area—67 square miles.

Gauge—Vertical staff 0 to 9 feet attached to the centre pier of bridge. Elevation of zero on gauge is 1297.00, which has remained unchanged since established.

Channel and Control—The river bed and banks are composed of solid rock, and consequently permanent.

Discharge Measurements—During the flood of 1914 an attempt was made to obtain a meter reading from the bridge, but owing to a velocity of about 14 feet per second it was found impossible to keep the meter in the water. During the low stages a permanent wading section is located 100 feet upstream.

Winter Flow—The relation of gauge height to discharge is somewhat affected when ice is present at the station. Meter measurements are made during that period to determine the winter discharge.

Accuracy—The open channel rating curve is well defined up to gauge height 1298.50 feet, and records of discharge up to 400 sec. feet are good.

Observer—Annie Barber, Salem.

Discharge Measurements of Irvine River near Salem in 1915

Date	Hydrographer	Width in Feet	Area of Section in Sq. Feet	Mean Velocity in Feet per Sec.	Gauge Height in Feet	Discharge in Sec-Feet	Discharge in Second-feet per Square Mile
Feb. 16....	Roberts, E	48	28	1.59	1,298.25	44 (a)	.....
May 27....	"	44	10	1.00	1,297.33	11	.....
June 17....	"	44	13	1.30	1,297.38	17	.....
July 12....	"	44	10	1.00	1,297.33	10	.....
Aug. 27....	"	47	30	2.03	1,297.75	61	.....
" 27....	"	47	28	2.25	1,297.77	63	.....
Sept. 9....	"	55	47	3.74	1,298.17	175	.....
" 9....	"	55	48	3.33	1,298.12	160	.....
Oct. 5....	"	48	32	2.50	1,297.83	80	.....

(a) Ice measurement; ice causing backwater at gauge.

Daily Gauge Height and Discharge of Irvine River near Salem for 1914-5

Drainage Area, 67 Square Miles

Date	November			December			January			February			March			April			May			June			July			August			September			October		
	Gauge Ht.	Dis-charge	Sec-ft.	Gauge Ht.	Dis-charge	Sec-ft.	Gauge Ht.	Dis-charge	Sec-ft.	Gauge Ht.	Dis-charge	Sec-ft.	Gauge Ht.	Dis-charge	Sec-ft.	Gauge Ht.	Dis-charge	Sec-ft.	Gauge Ht.	Dis-charge	Sec-ft.	Gauge Ht.	Dis-charge	Sec-ft.	Gauge Ht.	Dis-charge	Sec-ft.	Gauge Ht.	Dis-charge	Sec-ft.	Gauge Ht.	Dis-charge	Sec-ft.			
1	1297.19	4	1297.46	12	1297.33	12	1297.54	16	1297.54	16	1298.12	157	1298.00	120	1297.58	37	1297.19	5	1297.14	3	1297.33	12	1297.69	52	1297.75	63										
2	1297.17	4	1297.46	109	1297.25	7	1297.60	22	1297.62	24	1297.96	110	1298.00	120	1297.58	27	1297.17	4	1297.23	6	1297.30	10	1297.60	39	1298.58	350										
3	1297.17	4	1297.46	7	1297.33	12	1297.62	24	1297.62	24	1297.83	79	1298.00	120	1297.58	27	1297.17	4	1297.23	6	1297.30	10	1297.60	39	1298.58	350										
4	1297.19	4	1297.43	63	1297.33	12	1297.62	24	1297.62	24	1297.75	63	1298.08	144	1297.50	27	1297.17	4	1297.23	6	1297.30	10	1297.60	39	1298.58	350										
5	1297.19	4	1297.43	19	1297.33	12	1297.62	24	1297.62	24	1297.66	48	1298.34	241	1297.50	27	1297.17	4	1297.23	6	1297.30	10	1297.60	39	1298.58	350										
6	1297.18	4	1297.39	19	1297.33	12	1297.62	24	1297.62	24	1297.62	48	1298.44	283	1297.47	24	1297.17	4	1297.23	6	1297.30	10	1297.60	39	1298.58	350										
7	1297.17	3	1297.42	19	1297.56	34	1297.62	41	1297.62	24	1297.58	37	1298.54	330	1297.46	23	1297.17	4	1297.23	6	1297.30	10	1297.60	39	1298.58	350										
8	1297.26	3	1297.50	13	1297.62	42	1297.62	24	1297.62	24	1297.66	48	1298.71	421	1297.57	35	1297.21	5	1297.92	99	1297.64	45	1298.25	205	1297.74	61										
9	1297.35	3	1297.42	13	1297.68	51	1297.58	20	1297.58	20	1297.75	63	1299.13	701	1297.71	56	1297.29	9	1297.64	25	1297.48	17	1297.62	42	1297.58	37										
10	1297.35	3	1297.33	12	1297.92	99	1297.58	20	1297.58	20	1297.75	63	1299.13	701	1297.71	56	1297.29	9	1297.64	25	1297.48	17	1297.62	42	1297.58	37										
11	1297.31	3	1297.33	7	1297.89	92	1297.62	22	1297.62	22	1297.50	37	1298.83	494	1297.54	32	1297.29	9	1297.64	25	1297.48	17	1297.62	42	1297.58	37										
12	1297.31	3	1297.33	9	1297.81	74	1297.66	26	1297.66	26	1297.60	39	1298.38	257	1297.50	32	1297.25	7	1297.64	25	1297.48	17	1297.62	42	1297.58	37										
13	1297.33	8	1297.75	63	1297.83	63	1297.83	32	1297.83	32	1297.52	31	1298.08	144	1297.50	32	1297.25	7	1297.64	25	1297.48	17	1297.62	42	1297.58	37										
14	1297.26	16	1297.33	5	1297.66	48	1297.87	37	1297.87	37	1297.89	92	1298.08	144	1297.50	32	1297.25	7	1297.64	25	1297.48	17	1297.62	42	1297.58	37										
15	1297.33	23	1297.33	5	1297.58	27	1298.12	42	1298.12	42	1298.12	157	1298.02	126	1297.56	34	1297.54	32	1297.60	39	1297.79	70	1300.92	1954	1299.87	1219	1297.58	37								
16	1297.33	48	1297.33	5	1297.58	27	1298.20	237	1298.20	237	1298.25	205	1298.00	120	1297.50	27	1297.54	32	1297.60	39	1297.79	70	1300.92	1954	1299.87	1219	1297.58	37								
17	1297.27	48	1297.33	4	1297.54	21	1298.33	246	1298.33	246	1298.33	237	1297.96	110	1297.50	27	1297.54	32	1297.60	39	1297.79	70	1300.92	1954	1299.87	1219	1297.58	37								
18	1297.25	63	1297.29	6	1297.58	25	1298.33	205	1298.33	205	1298.33	237	1297.88	90	1297.37	15	1297.32	11	1297.35	13	1297.40	17	1297.63	79	1297.83	79										
19	1297.62	19	1297.29	9	1297.58	25	1298.16	171	1298.16	171	1298.46	292	1297.67	49	1297.25	7	1297.30	10	1297.50	27	1297.44	21	1297.92	99	1297.83	79										
20	1297.29	9	1297.27	9	1297.50	17	1297.92	99	1297.92	99	1298.66	393	1297.67	49	1297.25	7	1297.30	10	1297.50	27	1297.44	21	1297.92	99	1297.83	79										
21	1297.88	12	1297.25	9	1297.58	25	1297.87	87	1297.87	87	1298.58	350	1297.58	37	1297.25	7	1297.30	10	1297.50	27	1297.44	21	1297.92	99	1297.83	79										
22	1297.75	11	1297.25	12	1297.58	25	1297.77	67	1297.77	67	1298.58	350	1297.52	29	1297.25	7	1297.30	10	1297.50	27	1297.44	21	1297.92	99	1297.83	79										
23	1297.87	11	1297.25	9	1297.58	25	1298.00	120	1298.00	120	1298.58	350	1297.52	29	1297.25	7	1297.30	10	1297.50	27	1297.44	21	1297.92	99	1297.83	79										
24	1297.87	9	1297.23	15	1297.58	25	1298.54	330	1298.54	330	1298.83	494	1297.50	27	1297.29	9	1297.17	4	1297.45	22	1297.67	49	1297.73	59	1297.83	79										
25	1297.70	9	1297.23	12	1297.54	21	1298.29	221	1298.29	221	1298.63	494	1297.58	37	1297.28	9	1297.17	4	1297.45	22	1297.67	49	1297.73	59	1297.83	79										
26	1297.66	26	1297.20	9	1297.19	12	1298.00	120	1298.00	120	1298.67	398	1297.50	27	1297.33	12	1297.13	3	1297.46	23	1297.42	19	1297.75	63	1298.58	350										
27	1297.58	63	1297.25	12	1297.50	17	1298.42	274	1298.42	274	1298.42	274	1298.12	157	1297.29	9	1297.12	3	1297.42	19	1297.75	63	1298.58	350	1297.58	37										
28	1297.58	63	1297.23	12	1297.50	17	1298.16	171	1298.16	171	1298.29	221	1298.21	189	1297.08	2	1297.08	2	1297.46	23	1297.46	23	1297.75	63	1298.54	330										
29	1297.48	36	1297.21	7	1297.46	14	1298.16	171	1298.16	171	1298.29	221	1298.14	164	1297.25	7	1297.08	2	1297.46	23	1297.46	23	1297.75	63	1298.32	233										
30	1297.45	36	1297.20	7	1297.46	14	1298.16	171	1298.16	171	1298.29	221	1298.14	164	1297.25	7	1297.08	2	1297.46	23	1297.46	23	1297.75	63	1298.32	233										
31	1297.45	36	1297.20	7	1297.46	14	1298.16	171	1298.16	171	1298.29	221	1298.14	164	1297.25	7	1297.08	2	1297.46	23	1297.46	23	1297.75	63	1298.32	233										
31	1297.45	36	1297.20	7	1297.46	14	1298.16	171	1298.16	171	1298.29	221	1298.14	164	1297.25	7	1297.08	2	1297.46	23	1297.46	23	1297.75	63	1298.32	233										
31	1297.45	36	1297.20	7	1297.46	14	1298.16	171	1298.16	171	1298.29	221	1298.14	164	1297.25	7	1297.08	2	1297.46	23	1297.46	23	1297.75	63	1298.32	233										
31	1297.45	36	1297.20	7	1297.46	14	1298.16	171	1298.16	171	1298.29	221	1298.14	164	1297.25	7	1297.08	2	1297.46	23	1297.46	23	1297.75	63	1298.32	233										
31	1297.45	36	1297.20	7	1297.46	14	1298.16	171	1298.16	171	1298.29	221	1298.14	164	1297.25	7	1297.08	2	1297.46	23	1297.46	23	1297.75	63	1298.32	233										
31	1297.45	36	1297.20	7	1297.46	14	1298.16	171	1298.16	171	1298.29	221	1298.14	164	1297.25	7	1297.08	2	1297.46	23	1297.46	23	1297.75	63	1298.32	233										
31	1297.45	36	1297.20	7	1297.46	14	1298.16	171	1298.16	171	1298.29	221	1298.14	164	1297.25	7	1297.08	2	1297.46	23	1297.46	23	1297.75	63	1298.32	233										
31	1297.45	36	1297.20	7	1297.46	14	1298.16	171	1298.16	171	1298.29	221	1298.14	164	1297.25	7	1297.08	2	1297.46	23	1297.46	23	1297.75	63	1298.32	233										
31	1297.45	36	1297.20	7	1297.46	14	1298.16	171	1298.16	171	1298.29	221	1298.14	164	1297.25	7	1297.08	2	1297.46	23	1297.46	23	1297.75	63	1298.32	233										
31	1297.45	36	1297.20	7	1297.46	14	1298.16	171	1298.16	171	1298.29	221	1298.14	164	1297.25	7	1297.08	2	1297.46	23	1297.46	23	1297.75	63	1298.32	233										
31	1297.45	36	1297.20	7	1297.46	14	1298.16	171	1298.16	171	1298.29	221	1298.14	164	1297.25	7	1297.08	2	1297.46	23	1297.46	23	1297.75	63	1298.32	233										
31	1297.45	36	1297.20	7	1297.46	14	1298.16	171	1298.16	171	1298.29	221	1298.14	164	1297.25	7	1297.08	2	1297.46	23	1297.															

NOTE.—Relation of gauge height to discharge affected by ice from Jan. 17th to Feb. 16th, 1915; discharge for period computed from climatologic records, discharge measurements and observer's notes.

Monthly Discharge of Irvine River near Salem for 1914-5

Drainage Area 67 Square Miles

Month	Discharge in Second-feet			Discharge in Second-feet per Square Mile			Run-off
	Maximum	Minimum	Mean	Maximum	Minimum	Mean	Depth in Inches on Drainage Area
November (1914)	63	3	18	.94	.04	.27	.30
December "	109	4	17	1.63	.06	.26	.30
January (1915)	99	7	30	1.48	.10	.45	.52
February	330	16	90	4.93	.24	1.34	1.39
March	494	27	189	7.37	.40	2.82	3.25
April	701	27	176	10.46	.40	2.63	2.93
May	70	7	23	1.04	.10	.34	.39
June	39	2	9	.58	.03	.13	.15
July	99	3	27	1.48	.04	.40	.46
August	1,954	10	239	29.16	.15	3.57	4.12
September	1,219	12	193	18.20	.18	2.88	3.21
October	350	35	86	5.23	.52	1.28	1.48
The year	1,954	2	92	29.16	.03	1.36	18.50

Nith River near Canning

Location—At the highway bridge 200 feet upstream from the Grand Trunk Railway bridge lot 2, concession 2, Township of Blenheim, County of Oxford, 1 mile from the Village of Canning.

Records Available—July 5, 1913, to October 31, 1915.

Drainage Area—365 square miles.

Gauge—Vertical staff 0 to 3 feet on pile in centre of stream and 3 to 12 feet on left abutment. Elev. of zero on gauge is 799.00, which has remained unchanged since established.

Channel and Control—Slightly shifting bed; both banks permanent under ordinary conditions. Control only affected by ice jams during the early freshet.

Discharge Measurements—Made from the bridge during high-water stages, and from a permanent wading section 100 feet above during the low-water period.

Winter Flow—The relation of gauge height to discharge is seriously affected by ice during the winter, and measurements are made to determine the winter flow.

Regulation—Fluctuations of a serious nature occur in the river stage at this section, caused through the intermittent operation of the milling plant at Canning, 1½ miles above.

Accuracy—On account of stage variations, these records are not very reliable.

Observer—Lewis Baker, Canning P.O.

Discharge Measurements of Nith River near Canning in 1915

Date	Hydrographer	Width in Feet	Area of Section in Sq. Feet	Mean Velocity in Feet per Sec.	Gauge Height in Feet	Discharge in Sec-Feet	Discharge in Second-feet per Square Mile
Jan. 5....	Roberts, E.	100	77	1.90	801.99	146 (a)	.....
" 14....	"	96	95	2.24	802.23	212 (a)	.....
Feb. 10....	"	98	115	2.62	802.71	300 (a)	.....
" 26....	"	115	825	2.12	807.37	1,756 (b)	.....
Mar. 15....	"	115	388	3.36	803.58	1,305	.....
" 17....	"	115	445	3.54	804.12	1,575	.....
Apr. 8....	"	117	356	2.95	803.14	1,049	.....
" 14....	"	112	284	2.67	802.62	758	.....
" 15....	"	115	242	2.48	802.29	602	.....
May 15....	"	93	72	1.77	801.12	128	.....
" 15....	"	93	74	1.77	801.18	132	.....
June 5....	"	91	71	1.82	801.02	129	.....
" 5....	"	92	78	1.95	801.12	153	.....
July 3....	"	93	71	1.81	801.19	130	.....
" 10....	"	94	79	1.69	801.25	135	.....
" 10....	"	94	82	1.73	801.26	142	.....
" 10....	"	94	83	1.79	801.27	147	.....
Aug. 24....	"	95	132	3.00	802.06	396	.....
" 25....	"	95	130	3.11	802.10	405	.....
Sept. 24....	"	93	77	1.86	801.24	143	.....
" 24....	"	93	76	1.88	801.24	142	.....
Oct. 13....	"	93	93	2.17	801.43	202	.....

(a) Ice measurement.

(b) Ice jam below section.

Daily Gauge Height and Discharge of Nith River near Canning for 1914-5

Drainage Area, 365 Square Miles

Day	November			December			January			February			March			April			May			June			July			August			September			October		
	Gauge Ht.	Dis-charge	Sec.-ft.	Gauge Ht.	Dis-charge	Sec.-ft.	Gauge Ht.	Dis-charge	Sec.-ft.	Gauge Ht.	Dis-charge	Sec.-ft.	Gauge Ht.	Dis-charge	Sec.-ft.	Gauge Ht.	Dis-charge	Sec.-ft.	Gauge Ht.	Dis-charge	Sec.-ft.	Gauge Ht.	Dis-charge	Sec.-ft.	Gauge Ht.	Dis-charge	Sec.-ft.	Gauge Ht.	Dis-charge	Sec.-ft.	Gauge Ht.	Dis-charge	Sec.-ft.			
1	801.10	125	802.12	480	801.83	114	802.12	129	804.00	1398	802.02	434	801.39	197	801.04	116	800.89	94	801.85	357	801.48	224	801.29	167												
2	801.10	125	802.73	785	801.87	120	802.29	167	804.46	1290	801.98	416	801.33	179	800.94	101	801.08	122	801.67	284	801.37	191	801.84	375												
3	801.23	152	802.36	595	801.87	120	802.39	197	803.92	1177	801.83	348	801.29	167	800.87	93	801.06	119	803.77	1362	801.33	179	801.89	375												
4	801.12	129	802.10	470	801.92	129	802.56	248	803.50	1067	802.50	670	801.37	191	800.89	94	801.10	125	803.17	1003	801.44	212	801.92	389												
5	801.14	133	801.83	348	802.14	182	802.73	307	803.08	974	802.75	795	801.35	185	800.98	107	800.96	104	803.25	1067	801.42	206	802.14	490												
6	801.06	119	801.64	274	802.33	239	802.77	323	802.87	858	802.89	874	801.44	212	800.96	104	801.00	110	802.58	710	801.27	162	802.08	461												
7	801.02	113	801.71	299	802.37	251	802.68	288	802.96	908	803.08	974	801.39	197	801.00	110	801.04	116	802.37	605	801.19	143	801.85	357												
8	800.85	90	801.77	323	802.33	239	802.68	288	803.42	1161	803.37	1134	801.39	197	801.27	162	801.08	122	802.39	615	801.42	206	801.73	307												
9	800.92	98	801.79	331	802.33	239	802.60	260	804.00	1500	803.46	1183	801.39	197	801.12	129	801.00	110	802.25	545	801.46	218	801.62	267												
10	801.02	113	802.20	520	802.18	194	802.73	307	804.48	1812	803.46	1183	801.46	218	800.98	107	801.02	113	801.92	389	801.37	191	801.67	284												
11	800.98	107	801.92	389	802.39	257	802.60	266	804.37	1740	804.31	1701	801.12	129	800.96	104	801.06	119	802.04	443	801.33	179	801.46	218												
12	801.04	116	801.60	260	802.20	200	802.85	357	803.47	1513	804.62	1903	801.25	157	800.92	98	801.06	119	802.04	443	801.33	179	801.46	218												
13	801.02	113	801.68	254	802.31	233	802.83	348	803.50	1205	803.29	1089	801.29	167	801.04	116	801.08	122	803.25	1067	803.10	985	801.52	236												
14	801.20	145	801.64	242	802.31	233	803.04	443	803.48	1194	802.62	730	801.29	167	801.04	116	801.08	122	803.25	1067	803.10	985	801.52	236												
15	801.31	173	801.62	236	802.27	221	803.18	510	803.71	1326	802.31	575	801.23	152	801.02	113	801.02	113	803.00	930	802.83	836	801.58	254												
16	801.52	236	801.68	254	802.16	188	803.27	555	804.25	1662	802.12	480	801.00	110	801.10	125	800.94	101	802.50	670	801.87	366	801.73	307												
17	801.96	407	801.73	239	802.20	200	803.68	760	804.18	1597	802.00	425	801.12	129	801.10	125	800.75	80	802.17	1205	801.54	242	801.81	339												
18	801.85	357	801.79	257	802.23	209	803.64	740	804.06	1539	801.94	398	801.00	110	800.96	104	800.87	92	801.87	366	801.56	248	801.77	323												
19	801.81	339	801.68	224	802.23	179	803.64	740	803.56	1238	801.81	339	801.17	139	801.06	119	800.83	88	801.75	315	801.62	267	801.31	248												
20	801.79	331	801.77	221	802.02	129	803.68	760	803.23	1056	801.73	307	801.14	133	800.96	104	801.10	125	801.62	267	801.77	323	801.56	248												
21	801.68	288	801.79	197	802.18	165	803.52	680	803.20	1040	801.64	274	801.19	143	801.02	113	800.98	107	801.60	260	801.50	230	801.64	274												
22	801.68	288	801.73	179	802.27	191	803.64	740	803.02	941	801.56	248	801.23	152	800.96	104	800.92	98	801.64	274	801.44	212	801.64	274												
23	802.01	490	801.62	129	802.20	170	803.79	815	802.62	730	801.64	274	801.08	122	800.96	104	801.19	143	801.77	323	801.35	185	801.60	260												
24	801.87	366	801.71	127	802.20	170	803.49	665	803.08	974	801.60	260	801.00	110	801.04	116	801.02	113	802.21	525	801.39	197	801.50	230												
25	801.81	339	801.68	122	802.31	203	803.62	740	803.66	1296	801.44	212	801.04	116	801.02	113	800.71	76	802.00	425	801.35	185	801.38	224												
26	801.62	267	801.81	147	802.12	150	806.93	1760	803.94	1464	801.46	218	801.10	125	800.98	107	800.92	98	802.02	434	801.39	197	801.37	191												
27	801.77	366	801.75	117	802.23	179	806.25	1630	803.00	930	801.48	224	801.12	129	800.79	84	801.10	125	802.00	425	801.44	212	801.31	173												
28	802.04	443	801.81	127	802.06	137	805.71	1500	802.66	750	801.31	173	801.08	122	800.96	104	801.12	129	801.58	254	802.75	795	801.27	162												
29	802.04	443	801.81	127	802.06	137	805.71	1500	802.66	750	801.31	173	801.08	122	800.96	104	801.12	129	801.58	254	802.75	795	801.27	162												
30	802.23	535	801.85	135	802.23	179	.....	.....	802.44	640	801.25	157	800.92	98	800.83	88	801.25	157	801.44	212	802.38	610	801.35	185										
31	802.12	480	801.85	135	801.98	122	.....	.....	802.29	565	801.46	218	801.04	116	800.50	60	802.35	185	801.48	224	801.10	125	801.23	152										
31	.....	.....	801.87	120	802.02	129	.....	.....	802.14	490	.....	.....	801.04	116	.....	.....	802.57	251	801.42	206	.....	.....	801.06	119		

NOTE.—Relation of gauge height to discharge affected by ice from Dec. 13th, 1914, to March 4th, 1915; discharge for period computed from discharge measurements, observer's notes and climatologic records.

Monthly Discharge of Nith River near Canning for 1914-5

Drainage Area 365 Square Miles

Month	Discharge in Second-feet			Discharge in Second-feet per Square-mile			Run-off
	Maximum	Minimum	Mean	Maximum	Minimum	Mean	Depth in Inches on Drainage Area
November (1914)	535	90	246	1.47	.25	.67	.75
December. "	785	117	275	2.15	.32	.75	.86
January.. (1915)	257	114	183	.70	.31	.50	.58
February	1,760	129	606	4.82	.35	1.66	1.73
March.....	1,812	490	1,162	4.96	1.34	3.18	3.78
April	1,903	157	607	5.21	.43	1.66	1.85
May.....	218	98	150	.60	.27	.41	.47
June	162	60	108	.44	.16	.30	.33
July.....	251	76	119	.69	.21	.33	.38
August	1,362	206	561	3.73	.56	1.54	1.78
September	985	125	290	2.70	.34	.79	.88
October	490	119	270	1.34	.33	.74	.85
The year.....	1,903	60	380	5.21	.16	1.04	12.53

Speed River near Guelph

Location—At Caraher's highway bridge above the junction of the Speed and Eramosa Rivers and $3\frac{3}{4}$ miles from the City of Guelph, Township of Guelph, County of Wellington.

Records Available—October 27, 1913, to October 31, 1915.

Drainage Area—77 square miles.

Gauge—Vertical staff 0 to 12 feet, one on each abutment of bridge. Elevation of zero on each gauge is 1126.00, which has remained unchanged since established.

Channel and Control—The channel is straight for 250 feet above and 500 feet below the gauging section. During flood stages the control and banks are liable to shift, as the bed is composed of loose gravel. One channel exists at all stages.

Discharge Measurements—Made from the bridge and from a permanent low water section 300 feet down stream.

Winter Flow—The relation of gauge height to discharge is seriously affected by ice during the winter season, and measurements are taken during that period to determine the winter flow.

Regulation—A small mill is operated one mile and a half upstream. Slight fluctuations are caused only in the dry season, and are hardly noticeable at the gauge.

Accuracy—The open channel rating curve is fairly well defined for flows up to 500 second feet, the discharge for low flows being considered good.

Observer—Hugh Caraher, Guelph.

Discharge Measurements of Speed River near Guelph in 1915

Date	Hydrographer	Width in Feet	Area of Section in Sq. Feet	Mean Velocity in Feet per Sec.	Gauge Height in Feet	Discharge in Sec-Feet	Discharge in Second-feet per Square Mile
Feb. 18....	Roberts, E.....	60	62	0.89	1,129.25	55 (a)	
April 13....	"	70	138	1.50	1,128.92	207 (b)	
May 28....	"	46	31	0.86	1,128.21	27	
June 19....	"	46	34	1.00	1,128.25	34	
July 13....	"	47	48	1.33	1,128.44	64	
Aug. 11....	"	55	51	1.33	1,128.51	70	
Sept. 7....	"	46	44	1.35	1,128.46	60	
" 7....	"	46	46	1.52	1,128.48	70	
" 8....	"	58	67	1.88	1,128.75	126	
" 8....	"	58	68	2.03	1,128.77	138	
Oct. 6....	"	58	64	1.60	1,128.58	103	

(a) Ice measurement

(b) Measurement made at bridge section

Daily Gauge Height and Discharge of Speed River near Guelph for 1914-5

Drainage Area, 77 Square Miles.

Day	November		December		January		February		March		April		May		June		July		August		September		October	
	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge	Gauge Ht.	Dis-charge
	Feet	Sec-ft.	Feet	Sec-ft.	Feet	Sec-ft.	Feet	Sec-ft.	Feet	Sec-ft.	Feet	Sec-ft.	Feet	Sec-ft.	Feet	Sec-ft.	Feet	Sec-ft.	Feet	Sec-ft.	Feet	Sec-ft.	Feet	Sec-ft.
1	1128.08	19	1128.67	110	1128.75	21	1129.20	43	1129.62	74	1128.54	82	1128.37	53	1128.00	13	1127.92	8	1128.17	28	1128.25	37	1128.71	120
2	1128.12	23	1128.67	110	1128.79	20	1129.20	43	1129.52	65	1128.52	78	1128.37	53	1128.04	16	1127.92	8	1128.17	28	1128.25	37	1129.27	311
3	1128.16	27	1128.67	110	1128.75	17	1129.35	65	1129.42	60	1128.29	42	1128.29	42	1127.96	11	1127.92	8	1128.17	28	1128.25	37	1129.00	204
4	1128.14	25	1128.55	84	1128.75	14	1129.33	62	1129.42	57	1128.25	37	1128.33	47	1128.04	16	1127.92	8	1129.92	563	1128.17	28	1128.62	99
5	1128.08	19	1128.42	60	1128.71	14	1129.33	62	1129.37	56	1128.79	140	1128.25	37	1128.04	16	1128.21	32	1129.46	379	1128.08	19	1128.54	82
6	1128.04	16	1128.20	31	1128.85	26	1129.29	43	1129.35	57	1129.12	246	1128.29	42	1128.00	13	1128.17	28	1129.17	265	1128.33	47	1128.54	82
7	1128.00	13	1127.96	11	1128.85	26	1129.20	43	1129.27	60	1129.22	46	1128.29	42	1128.00	23	1128.17	28	1129.17	265	1128.42	60	1128.50	74
8	1128.00	13	1127.94	9	1128.87	28	1129.29	56	1129.23	65	1129.29	311	1128.75	130	1129.25	37	1128.67	110	1129.00	204	1128.67	110	1128.44	64
9	1128.00	13	1127.92	8	1128.79	24	1129.29	56	1129.20	69	1129.33	327	1128.54	82	1128.67	110	1128.75	130	1128.87	163	1128.62	99	1128.33	47
10	1127.92	8	1127.96	11	1128.83	20	1129.29	56	1129.20	69	1129.58	427	1128.37	53	1128.37	53	1128.33	42	1128.58	90	1128.46	67	1128.33	47
11	1127.92	8	1128.04	12	1128.83	24	1129.29	56	1129.25	74	1129.50	395	1128.20	31	1128.25	37	1128.29	42	1128.29	42	1128.29	42	1128.25	37
12	1128.04	16	1128.12	15	1128.85	26	1129.29	56	1129.23	80	1129.33	327	1128.25	37	1128.25	37	1128.17	28	1129.33	327	1128.33	47	1128.27	39
13	1128.16	27	1128.12	15	1128.89	30	1129.31	59	1129.23	86	1128.79	140	1128.42	60	1128.17	28	1128.50	74	1130.08	627	1130.75	895	1128.33	47
14	1128.08	19	1128.04	10	1128.94	36	1129.29	56	1129.48	115	1128.66	108	1128.29	42	1128.08	19	1128.25	37	1129.25	295	1129.71	479	1128.33	47
15	1128.37	53	1128.37	31	1128.94	36	1129.35	62	1129.64	130	1128.64	103	1128.17	28	1128.50	74	1128.17	28	1128.75	130	1128.58	191	1128.60	94
16	1128.96	191	1128.66	65	1128.96	38	1129.31	59	1129.88	204	1128.58	90	1128.08	19	1128.50	74	1128.17	28	1128.62	60	1128.75	130	1128.46	67
17	1128.87	163	1128.25	21	1128.96	38	1129.31	59	1130.16	257	1128.46	67	1128.17	28	1128.33	47	1127.92	8	1128.50	74	1128.92	178	1128.39	56
18	1128.66	108	1128.62	65	1128.98	41	1129.31	59	1129.32	218	1128.46	67	1128.17	28	1128.17	28	1127.87	6	1128.42	60	1128.75	130	1128.33	47
19	1128.54	82	1128.58	57	1129.00	43	1129.29	56	1130.06	214	1128.42	67	1128.12	23	1128.17	28	1128.00	13	1128.42	60	1128.62	99	1128.37	53
20	1128.44	64	1128.37	26	1129.00	43	1129.29	67	1129.98	211	1128.46	67	1128.12	23	1128.17	28	1128.04	16	1128.42	60	1128.62	99	1128.42	60
21	1128.33	47	1128.54	31	1128.94	36	1129.29	76	1129.29	204	1128.46	67	1128.12	23	1128.17	28	1128.04	16	1128.42	60	1128.50	74	1128.42	60
22	1128.37	53	1128.52	26	1129.00	43	1129.31	84	1129.50	172	1128.46	67	1128.04	16	1128.12	23	1128.67	110	1128.12	23	1128.46	67	1128.33	47
23	1128.46	67	1128.68	43	1129.00	36	1129.29	84	1129.50	166	1128.46	67	1128.08	19	1128.00	13	1128.50	74	1128.00	13	1128.42	60	1128.27	39
24	1128.42	60	1128.50	31	1129.00	36	1129.29	105	1129.33	166	1128.39	56	1128.12	23	1128.00	13	1128.50	74	1128.25	37	1128.29	42	1128.25	37
25	1128.39	56	1128.48	24	1129.04	36	1129.36	135	1129.44	211	1128.39	56	1128.12	23	1128.08	19	1128.29	42	1128.25	37	1128.29	42	1128.25	37
26	1128.57	88	1128.50	21	1129.02	33	1129.81	125	1129.37	303	1128.39	56	1128.12	23	1127.96	11	1128.17	28	1128.62	99	1128.62	99	1128.25	37
27	1128.43	143	1128.62	21	1129.04	36	1129.75	103	1129.08	232	1128.54	82	1128.08	19	1127.96	11	1128.17	28	1128.33	47	1129.08	232	1128.25	37
28	1128.73	125	1128.75	21	1129.04	36	1129.71	86	1128.85	157	1128.37	53	1128.12	23	1127.96	11	1128.29	42	1128.33	47	1129.08	232	1128.25	37
29	1128.70	117	1128.77	20	1129.04	36	.....	.....	1128.54	82	1128.64	103	1128.17	28	1127.96	11	1128.37	53	1128.21	32	1128.50	74	1128.21	32
30	1128.68	112	1128.75	20	1129.02	33	.....	.....	1128.75	130	1128.50	74	1128.04	16	1127.92	8	1128.17	28	1128.33	47	1128.50	74	1128.17	28
31	.....	.....	1128.75	20	1129.02	33	.....	.....	1128.58	90	.....	.....	1127.96	11	.....	.....	1128.17	28	1128.37	53	.....	.....	1128.14	25

NOTE.—Relation of gauge height to discharge affected by ice from Dec. 10th, 1914, to Feb. 24th, 1915; discharge for period computed from discharge measurements, observer's notes and climatologic records.

Monthly Discharge of Speed River near Guelph for 1914-5

Drainage Area, 77 Square Miles

Month	Discharge in Second-feet			Discharge in Second-feet per Square Mile			Run-off
	Maximum	Minimum	Mean	Maximum	Minimum	Mean	Depth in Inches on Drainage Area
November (1914)	191	8	59	2.48	.10	.77	.86
December “	110	8	37	1.43	.10	.48	.55
January (1915)	43	14	30	.56	.18	.39	.45
February	135	43	70	1.75	.56	.91	.95
March	307	82	137	3.98	1.07	1.78	2.05
April	427	37	132	5.55	.48	1.71	1.91
May	130	11	36	1.69	.14	.47	.54
June	110	8	27	1.43	.10	.35	.39
July	130	6	39	1.69	.08	.51	.59
August	627	13	138	8.14	.17	1.79	2.06
September	895	19	121	11.62	.25	1.57	1.75
October	311	25	67	4.04	.32	.87	1.00
The year	895	6	74	11.62	.08	.96	13.10

Speed River at Hespeler

Location—At a point 100 feet below the jail, which adjoins the power house, in the Town of Hespeler, Township of Waterloo, County of Waterloo.

Records Available—Discharge measurements from July 10, 1913. Daily gauge heights from October 23, 1913, to October 31, 1915.

Drainage Area—250 square miles.

Gauge—Vertical staff 0 to 12 feet on jail wall adjoining power house. The elevation of zero on the gauge is 935.00.

Channel and Control—Straight for about 300 feet above and below the gauging section. Loose gravel forms the bed of this stream, which is decidedly shifting. The banks are low, and overflow when the water raises 2 feet above normal. Weeds at the control and in channel have a decided effect at the gauging section.

Discharge Measurements—Made from a permanent wading section 100 feet below the gauge during the low stages, and the dam 400 feet above will be used as a weir during the flood season.

Winter Flow—The relation of gauge height to discharge is somewhat affected by the presence of ice for a short period during the winter season.

Regulation—A dam 400 ft. above this section causes serious fluctuations in the river stage during the low water period.

Accuracy—Owing to the shifting bed and the presence of weeds at and below section, greatly interfering with the metering of stream, these records can only be classed as fair.

Observer—W. D. Scott, Hespeler.

Discharge Measurements of Speed River at Hespeler in 1915

Date	Hydrographer	Width in Feet	Area of Section in Sq. Feet	Mean Velocity in Feet per Sec.	Gauge Height in Feet	Discharge in Sec-Feet	Discharge in Second-feet per Square Mile
Jan. 1....	Roberts, E....	92	90	.57	936.16	51 (a)	.....
Feb. 8....	"	95	105	1.27	936.64	135 (b)	.....
" 18....	"	95	121	1.46	936.58	176 (c)	.....
" 18....	"	95	121	1.43	936.58	174 (c)	.....
Mar. 4....	"	92	117	1.62	936.62	189	.....
Apr. 15....	"	103	163	2.28	937.12	373	.....
" 15....	"	103	163	2.27	937.12	371	.....
May 21....	"	93	89	1.32	936.29	118	.....
June 7....	"	93	87	1.23	936.27	107	.....
July 8....	"	92	108	1.45	936.62	157	.....
" 8....	"	92	110	1.34	936.62	150	.....
Aug. 26....	"	90	125	1.92	936.87	241 (d)	.....
" 26....	"	90	123	1.92	936.87	236 (d)	.....
Sept. 8....	"	99	164	2.20	937.21	363 (d)	.....
" 8....	"	98	159	2.10	937.17	335 (d)	.....
Oct. 14....	"	93	116	1.66	936.66	194 (d)	.....

(a) Broken ice jammed in channel below section.

(b) Ice at gauge, open water in centre.

(c) Ice 20 feet below section interfering somewhat.

(d) Weeds present in channel.

Daily Gauge Height and Discharge of Speed River at Hespeler for 1914-5

Drainage Area, 250 Square Miles

Day	November			December			January			February			March			April			May			June			July			August			September			October		
	Gauge Ht.	Dis-charge	Sec-ft.	Gauge Ht.	Dis-charge	Sec-ft.	Gauge Ht.	Dis-charge	Sec-ft.	Gauge Ht.	Dis-charge	Sec-ft.	Gauge Ht.	Dis-charge	Sec-ft.	Gauge Ht.	Dis-charge	Sec-ft.	Gauge Ht.	Dis-charge	Sec-ft.	Gauge Ht.	Dis-charge	Sec-ft.	Gauge Ht.	Dis-charge	Sec-ft.	Gauge Ht.	Dis-charge	Sec-ft.	Gauge Ht.	Dis-charge	Sec-ft.			
1	935.84	37	936.48	141	936.20	55	936.37	80	936.37	117	936.83	232	936.70	195	936.25	94	935.85	38	936.46	136	936.87	244	936.89	250	936.87	244	936.87	244	936.87	244	936.87	244	936.89	250		
2	936.06	63	936.46	136	936.10	43	936.44	92	936.44	132	936.88	247	936.55	157	936.12	72	936.04	61	936.42	127	936.92	259	937.39	430	936.92	259	936.92	259	936.92	259	936.92	259	937.39	430		
3	936.09	68	936.60	169	936.14	48	936.44	92	936.44	132	936.87	244	936.46	136	936.08	66	936.08	67	936.58	164	936.54	154	937.56	506	936.54	154	936.54	154	936.54	154	936.54	154	937.56	506		
4	936.07	65	936.62	174	936.12	45	936.42	89	936.42	132	936.85	238	936.55	157	936.10	69	936.12	72	937.96	716	936.48	141	937.37	422	936.48	141	936.48	141	936.48	141	937.37	422	937.37	422		
5	936.08	66	936.56	159	936.08	41	936.44	92	936.44	132	936.85	238	936.55	157	936.10	69	936.12	72	937.96	716	936.48	141	937.37	422	936.48	141	936.48	141	936.48	141	937.37	422	937.37	422		
6	936.08	66	936.23	90	936.06	39	936.44	92	936.44	132	936.86	272	936.39	121	936.07	64	936.25	87	938.50	1065	936.4	132	937.08	312	938.50	1065	936.4	132	937.08	312	937.08	312	937.08	312		
7	936.06	63	936.04	61	936.11	44	936.12	45	936.12	93	937.20	355	936.37	117	936.20	85	936.37	117	937.92	692	936.83	252	936.96	272	936.83	252	936.83	252	936.83	252	936.96	272	936.96	272		
8	935.82	35	936.31	105	936.18	53	936.46	96	936.46	96	937.58	516	936.39	121	936.60	169	936.39	121	937.92	692	936.83	252	936.96	272	936.83	252	936.83	252	936.83	252	936.96	272	936.96	272		
9	936.25	94	936.20	55	936.20	55	936.46	96	936.46	96	937.58	516	936.39	121	936.60	169	936.39	121	937.92	692	936.83	252	936.96	272	936.83	252	936.83	252	936.83	252	936.96	272	936.96	272		
10	936.04	61	936.12	72	936.22	58	936.48	99	936.48	99	937.64	545	936.81	226	936.71	198	936.96	272	937.25	374	937.92	692	936.81	226	937.92	692	937.92	692	937.92	692	936.81	226	936.81	226		
11	936.03	59	936.16	79	936.14	48	936.37	117	936.37	117	936.56	159	938.08	788	936.52	150	936.54	155	936.58	164	937.00	285	936.89	250	936.89	250	936.89	250	936.89	250	936.67	187	936.67	187		
12	936.02	58	936.18	82	936.20	55	936.37	117	936.37	117	936.52	150	937.64	545	936.52	150	936.31	105	936.56	159	936.96	272	937.69	570	936.96	272	937.69	570	937.69	570	936.58	164	936.58	164		
13	936.03	59	936.06	63	936.20	55	936.44	132	936.44	132	936.57	162	937.46	460	936.52	150	936.25	94	936.39	121	938.29	919	938.92	1375	936.50	145	938.92	1375	938.92	1375	936.50	145	936.50	145		
14	936.01	56	936.16	79	936.29	68	936.37	117	936.37	117	936.79	220	937.27	382	936.48	141	936.46	136	936.35	113	938.12	812	939.50	1820	936.62	174	939.50	1820	939.50	1820	936.62	174	936.62	174		
15	935.92	45	936.29	101	936.20	55	936.37	117	936.37	117	936.92	259	936.96	272	936.37	117	936.46	136	936.29	101	937.35	405	938.31	932	936.87	244	938.31	932	938.31	932	936.87	244	936.87	244		
16	936.85	38	936.04	61	936.26	63	936.35	113	937.34	409	936.89	250	936.39	121	936.33	109	936.21	87	936.85	238	937.39	430	936.71	198	937.39	430	937.39	430	937.39	430	936.81	226	936.81	226		
17	936.58	164	936.04	61	936.26	63	936.35	113	937.34	409	936.89	250	936.39	121	936.33	109	936.21	87	936.85	238	937.39	430	936.71	198	937.39	430	937.39	430	937.39	430	936.71	198	936.71	198		
18	936.52	150	936.06	63	936.29	68	936.35	113	937.39	430	936.81	226	936.32	107	936.27	98	936.21	87	936.85	238	937.39	430	936.71	198	937.39	430	937.39	430	937.39	430	936.71	198	936.71	198		
19	936.39	121	936.06	63	936.25	62	936.42	127	937.42	444	936.77	220	936.22	85	936.29	101	936.25	94	936.67	187	937.25	374	936.73	203	937.25	374	937.25	374	937.25	374	936.73	203	936.73	203		
20	936.18	82	935.87	40	936.27	65	936.39	121	937.39	430	936.77	220	936.22	85	936.29	101	936.25	94	936.67	187	937.25	374	936.73	203	937.25	374	937.25	374	937.25	374	936.73	203	936.73	203		
21	936.20	85	936.02	58	936.31	71	936.33	109	937.33	405	936.64	179	936.27	98	936.35	113	936.25	94	936.67	187	937.25	374	936.73	203	937.25	374	937.25	374	937.25	374	936.64	179	936.64	179		
22	936.10	69	936.04	61	936.25	62	936.39	121	937.39	430	936.77	220	936.22	85	936.29	101	936.25	94	936.67	187	937.25	374	936.73	203	937.25	374	937.25	374	937.25	374	936.64	179	936.64	179		
23	936.16	79	936.02	58	936.33	74	936.33	109	937.33	405	936.66	185	936.25	94	936.19	83	936.77	215	936.62	174	936.96	272	936.58	164	936.96	272	936.96	272	936.96	272	936.58	164	936.58	164		
24	936.12	72	936.06	63	936.04	37	936.62	174	937.37	422	936.60	169	936.25	94	936.20	85	936.48	141	936.77	215	936.62	174	936.96	272	936.58	164	936.96	272	936.96	272	936.58	164	936.58	164		
25	936.27	98	935.66	23	936.33	74	937.00	285	937.62	535	936.48	141	936.27	98	936.12	72	936.50	145	936.69	192	936.79	220	936.52	150	936.79	220	936.79	220	936.79	220	936.52	150	936.52	150		
26	936.27	98	935.62	20	936.39	83	936.92	259	937.75	600	936.94	266	936.24	92	936.00	55	936.42	127	936.77	215	936.54	493	936.50	145	936.54	493	936.54	493	936.54	493	936.50	145	936.50	145		
27	936.44	132	935.62	20	936.42	89	936.75	209	937.42	444	936.94	266	936.24	92	936.00	55	936.42	127	936.77	215	936.54	493	936.50	145	936.54	493	936.54	493	936.54	493	936.48	140	936.48	140		
28	936.31	105	936.02	35	936.35	77	936.81	226	937.33	405	937.08	317	936.14	75	936.25	94	936.62	174	936.71	198	937.52	487	936.48	140	937.52	487	937.52	487	937.52	487	936.48	140	936.48	140		
29	936.31	105	936.10	43	936.35	77	936.81	226	937.33	405	937.08	317	936.14	75	936.25	94	936.62	174	936.71	198	937.52	487	936.48	140	937.52	487	937.52	487	937.52	487	936.42	127	936.42	127		
30	936.33	109	936.23	59	936.35	77	936.81	226	937.33	405	937.08	317	936.14	75	936.25	94	936.62	174	936.71	198	937.52	487	936.48	140	937.52	487	937.52	487	937.52	487	936.42	127	936.42	127		
31	936.33	109	936.23	59	936.35	77	936.81	226	937.33	405	937.08	317	936.14	75	936.25	94	936.62	174	936.71	198	937.52	487	936.48	140	937.52	487	937.52	487	937.52	487	936.42	127	936.42	127		
32	936.33	109	936.23	59	936.35	77	936.81	226	937.33	405	937.08	317	936.14	75	936.25	94	936.62	174	936.71	198	937.52	487	936.48	140	937.52	487	937.52	487	937.52	487	936.42	127	936.42	127		
33	936.33	109	936.23	59	936.35	77	936.81	226	937.33	405	937.08	317	936.14	75	936.25	94	936.62	174	936.71	198	937.52	487	936.48	140	937.52	487	937.52	487	937.52	487	936.42	127	936.42	127		
34	936.33	109	936.23	59	936																															

Monthly Discharge of Speed River at Hespeler for 1914-5

Drainage Area, 250 Square Miles

Month	Discharge in Second-feet			Discharge in Second-feet per Square Mile			Run-off
	Maximum	Minimum	Mean	Maximum	Minimum	Mean	Depth in Inches on Drainage Area
November (1914)	164	35	79	.66	.14	.32	.36
December “	174	20	77	.70	.08	.31	.36
January (1915)	89	37	59	.36	.15	.24	.28
February	285	45	127	1.14	.18	.51	.53
March.....	600	93	284	2.40	.37	1.14	1.31
April	788	141	301	3.15	.56	1.20	1.34
May.....	226	75	121	.90	.30	.48	.55
June	293	55	104	1.17	.22	.42	.47
July.....	272	38	137	1.09	.15	.55	.63
August.....	1,065	127	367	4.26	.51	1.47	1.69
September	1,820	132	426	7.28	.53	1.70	1.90
October	506	117	219	2.02	.47	.88	1.01
The year	1,820	20	192	7.28	.08	.77	10.43

Whiteman's Creek near Burford

Location—At the first concrete bridge above the confluence of the creek with the Grand River, lot 14, concession 3, Township of Brantford, County of Brant.

Records Available—June 30, 1913, to October 31, 1915.

Drainage Area—154 square miles.

Gauge—Vertical staff 0 to 12 feet on the left abutment of bridge. Elevation of zero on the gauge 690.00, which has remained unchanged since established.

Channel and Control—All the water passes between the two abutments. The river bed directly under the bridge is solid concrete. During flood conditions on the Grand River this section may be affected by backwater.

Discharge Measurements—Made from the bridge at all stages.

Winter Flow—Seriously affected by ice.

Regulation—A mill located 2 miles upstream known as App's Mill causes serious daily fluctuations in the river stage at this section.

Accuracy—The fluctuations caused by chopping mill make it difficult to obtain the representative mean daily gauge height. The rating curve is fairly well defined up to 700 second feet.

Observer—J. R. Davis, Brantford.

Discharge Measurements of Whiteman's Creek near Burford in 1915

Date	Hydrographer	Width in Feet	Area of Section in Sq. Feet	Mean Velocity in Feet per Sec.	Gauge Height in Feet	Discharge in Sec-Feet	Discharge in Second-feet per Square Mile
Jan. 8....	Roberts, E....	64	44	1.86	691.83	80 (a)	.....
" 11....	"	64	60	2.05	692.10	123 (b)	.....
" 11....	"	64	60	2.10	692.12	124 (b)	.....
" 21....	"	64	72	2.11	691.44	151 (c)	.....
Feb. 12....	"	64	67	2.12	692.08	142 (c)	.....
" 20....	"	64	113	3.09	692.07	350 (c)	.....
" 20....	"	64	115	3.00	692.04	342 (c)	.....
" 25....	"	64	171	4.64	693.00	791	.....
" 25....	"	64	171	4.99	693.00	851	.....
" 25....	"	64	171	5.15	693.02	879	.....
Mar. 13....	"	64	97	3.04	691.83	294	.....
Apr. 9....	"	64	80	2.54	691.44	203	.....
May 3....	"	51	33	1.68	690.78	53	.....
June 1....	"	58	30	1.58	690.73	46	.....
July 5....	"	59	31	1.38	690.75	43	.....
" 5....	"	59	31	1.51	690.77	47	.....
" 17....	"	60	34	1.52	690.79	52	.....
" 17....	"	60	34	1.50	690.79	51	.....
" 18....	"	60	34	1.55	690.79	53	.....
Aug. 21....	"	64	55	1.95	691.10	107	.....
" 21....	"	64	53	2.05	691.10	109	.....
" 21....	"	64	52	1.96	691.08	102	.....
Sept. 25....	"	64	45	1.83	691.00	82	.....
" 25....	"	62	38	1.73	690.89	66	.....
" 25....	"	64	45	1.67	690.98	75	.....
" 25....	"	63	43	1.72	690.95	74	.....
Oct. 13....	"	63	45	1.77	690.96	80	.....
" 26....	"	63	44	1.75	690.98	77	.....

(a) Ice measurement.

(b) Ice measurement; water flowing over top of ice.

(c) Channel open in centre; ice at gauge.

Daily Gauge Height and Discharge of Whiteman's Creek near Burford for 1914-5

Drainage Area, 154 Square Miles

Day	November			December			January			February			March			April			May			June			July			August			September			October				
	Gauge Ht.	Dis-charge	Feet	Gauge Ht.	Dis-charge	Feet	Gauge Ht.	Dis-charge	Feet	Gauge Ht.	Dis-charge	Feet	Gauge Ht.	Dis-charge	Feet	Gauge Ht.	Dis-charge	Feet	Gauge Ht.	Dis-charge	Feet	Gauge Ht.	Dis-charge	Feet	Gauge Ht.	Dis-charge	Feet	Gauge Ht.	Dis-charge	Feet	Gauge Ht.	Dis-charge	Feet					
1	690.71	44	691.27	144	691.31	37	691.66	46	691.48	198	691.31	153	690.92	74	690.50	20	690.60	31	690.77	52	691.12	111	691.19	126	691.12	111	690.89	69	691.44	187	690.73	47	690.83	60	691.58	225	691.44	187
2	690.77	52	691.44	187	691.42	43	691.68	52	691.71	263	691.25	139	690.75	49	690.50	20	690.62	33	690.73	47	690.83	60	691.58	225	691.44	187	690.89	69	691.44	187	690.73	47	690.83	60	691.58	225	691.44	187
3	690.71	44	691.54	214	691.50	52	691.71	56	691.71	263	691.20	128	690.87	66	690.62	33	690.62	33	690.73	47	690.83	60	691.58	225	691.44	187	690.89	69	691.44	187	690.73	47	690.83	60	691.58	225	691.44	187
4	690.71	44	691.37	168	691.56	59	691.87	79	691.54	214	691.20	128	690.83	60	690.71	44	690.62	33	690.69	42	690.77	49	690.87	66	691.37	168	691.19	126	690.87	66	691.37	168	691.19	126	690.87	66	691.37	168
5	630.73	47	691.27	144	691.43	47	691.94	88	691.37	168	691.23	135	690.89	69	690.69	42	690.67	39	691.96	340	691.17	121	691.29	149	691.29	149	691.29	149	691.29	149	691.29	149	691.29	149	691.29	149		
6	690.68	41	691.14	115	691.51	56	691.92	88	691.25	139	691.33	158	690.97	66	690.69	42	690.67	39	692.10	386	690.87	66	691.62	237	691.56	218	690.89	69	691.44	187	690.73	47	690.83	60	691.58	225	691.44	187
7	690.73	47	691.10	107	691.87	88	691.94	96	691.20	128	691.27	144	690.94	78	690.73	47	690.64	36	691.64	242	691.04	96	691.23	137	691.23	137	691.04	96	691.04	96	691.04	96	691.04	96	691.04	96		
8	690.71	44	691.06	99	691.83	79	691.96	99	691.20	128	691.46	192	691.04	96	690.85	63	690.87	66	691.64	242	691.04	96	691.23	137	691.23	137	691.04	96	691.04	96	691.04	96	691.04	96	691.04	96		
9	690.75	49	690.98	86	691.87	88	691.98	107	691.25	139	691.52	209	691.12	111	691.00	88	690.98	85	691.62	237	691.04	96	691.23	137	691.23	137	691.04	96	691.04	96	691.04	96	691.04	96	691.04	96		
10	690.75	49	691.00	88	691.92	92	692.00	113	691.20	128	691.56	220	691.14	115	690.90	71	690.79	45	691.58	225	691.00	88	691.10	107	691.10	107	691.00	88	691.00	88	691.00	88	691.00	88	691.00	88		
11	690.68	41	690.89	69	691.98	101	692.04	124	691.29	149	691.60	231	691.06	99	690.81	57	690.71	44	691.54	214	690.85	63	691.10	107	691.10	107	691.00	88	691.00	88	691.00	88	691.00	88	691.00	88		
12	690.58	29	690.92	74	691.96	107	692.12	144	691.50	203	691.71	263	690.92	74	690.79	55	690.73	47	691.54	214	690.87	66	691.02	92	691.02	92	691.00	88	691.00	88	691.00	88	691.00	88	691.00	88		
13	690.68	41	690.87	66	691.87	107	692.14	151	691.71	263	691.62	237	690.89	69	690.75	49	690.67	39	691.75	275	691.08	103	691.08	103	691.08	103	691.08	103	691.08	103	691.08	103	691.08	103	691.08	103		
14	690.66	38	690.92	74	691.96	117	692.23	217	691.92	327	691.44	187	690.83	60	690.79	55	690.64	36	691.75	275	691.08	103	691.08	103	691.08	103	691.08	103	691.08	103	691.08	103	691.08	103	691.08	103		
15	690.81	57	691.35	88	691.83	122	692.53	275	692.16	407	691.35	163	690.83	60	690.71	44	690.67	39	691.75	275	691.08	103	691.08	103	691.08	103	691.08	103	691.08	103	691.08	103	691.08	103	691.08	103		
16	691.14	115	691.35	88	691.56	128	692.50	421	692.31	462	691.33	158	690.85	63	690.62	33	690.64	36	691.75	275	691.08	103	691.08	103	691.08	103	691.08	103	691.08	103	691.08	103	691.08	103	691.08	103		
17	691.20	128	691.04	43	691.20	128	692.50	538	692.29	454	691.20	128	690.79	55	690.62	33	690.64	36	691.75	275	691.08	103	691.08	103	691.08	103	691.08	103	691.08	103	691.08	103	691.08	103	691.08	103		
18	691.23	135	691.06	49	691.98	347	692.50	538	692.14	400	691.18	124	690.81	57	690.62	33	690.64	36	691.75	275	691.08	103	691.08	103	691.08	103	691.08	103	691.08	103	691.08	103	691.08	103	691.08	103		
19	690.96	81	691.16	56	691.23	133	692.14	400	691.18	318	691.04	96	690.73	47	690.58	29	690.67	39	691.75	275	691.08	103	691.08	103	691.08	103	691.08	103	691.08	103	691.08	103	691.08	103	691.08	103		
20	691.16	120	691.00	37	691.23	117	691.92	327	691.77	281	691.02	92	690.73	47	690.58	29	690.67	39	691.75	275	691.08	103	691.08	103	691.08	103	691.08	103	691.08	103	691.08	103	691.08	103	691.08	103		
21	691.33	158	691.00	39	691.29	107	691.87	312	691.77	281	691.02	92	690.73	47	690.58	29	690.67	39	691.75	275	691.08	103	691.08	103	691.08	103	691.08	103	691.08	103	691.08	103	691.08	103	691.08	103		
22	690.92	74	691.31	56	691.48	128	691.75	275	691.02	92	690.73	47	690.58	29	690.67	39	690.62	33	691.75	275	691.08	103	691.08	103	691.08	103	691.08	103	691.08	103	691.08	103	691.08	103	691.08	103		
23	691.06	99	691.20	79	691.46	107	691.94	334	691.56	220	691.04	96	690.71	44	690.58	29	690.67	39	691.75	275	691.08	103	691.08	103	691.08	103	691.08	103	691.08	103	691.08	103	691.08	103	691.08	103		
24	690.96	81	691.39	83	691.50	113	692.46	522	691.71	263	690.89	69	690.67	39	690.62	33	690.60	31	691.75	275	691.08	103	691.08	103	691.08	103	691.08	103	691.08	103	691.08	103	691.08	103	691.08	103		
25	690.89	69	691.37	79	691.23	56	693.06	705	691.73	265	690.91	69	690.67	39	690.62	33	690.60	31	691.75	275	691.08	103	691.08	103	691.08	103	691.08	103	691.08	103	691.08	103	691.08	103	691.08	103		
26	690.89	69	691.42	71	691.66	107	693.06	705	691.73	265	690.91	69	690.67	39	690.62	33	690.60	31	691.75	275	691.08	103	691.08	103	691.08	103	691.08	103	691.08	103	691.08	103	691.08	103	691.08	103		
27	691.08	103	691.46	79	691.60	88	692.46	522	691.66	248	690.83	60	690.69	42	690.58	29	690.67	39	691.75	275	691.08	103	691.08	103	691.08	103	691.08	103	691.08	103	691.08	103	691.08	103	691.08	103		
28	691.18	124	691.39	79	691.52	63	692.23	432	691.62	237	690.83	60	690.69	42	690.58	29	690.67	39	691.75	275	691.08	103	691.08	103	691.08	103	691.08	103	691.08	103	691.08	103	691.08	103	691.08	103		
29	691.18	124	691.62	107	691.54	49	.....	.....	691.37	168	690.87	66	690.69	42	690.60	31	690.67	39	691.75	275	691.08	103	691.08	103	691.08	103	691.08	103	691.08	103	691.08	103	691.08	103	691.08	103
30	691.18	124	691.68	122	691.35	26	.....	.....	691.33	158	690.85	63	690.64	36	690.58	29	690.67	39	691.75	275	691.08	103	691.08	103	691.08	103	691.08	103	691.08	103	691.08	103	691.08	103	691.08	103
31	.....	.....	691.56	97	691.60	37	.....	.....	691.31	153	.....	.....	690.62	33	.....	.....	690.58	29	691.75	275	691.08	103	691.08	103	691.08	103	691.08	103	691.08	103	691.08	103	691.08	103	691.08	103

NOTE.—Relation of gauge height to discharge affected by ice from Dec. 15th, 1914, to Feb. 15th, 1915; discharges computed from climatologic records, discharge measurements and observer's notes.

Monthly Discharge of Whiteman's Creek near Burford for 1914-5

Drainage Area 154 Square Feet

Month	Discharge in Second-feet			Discharge in Second-feet per Square Mile			Run-off
	Maximum	Minimum	Mean	Maximum	Minimum	Mean	Depth in Inches on Drainage Area
November (1914)	158	38	76	1.03	.25	.49	.55
December "	214	37	93	1.39	.24	.60	.69
January (1915)	347	26	94	2.25	.17	.61	.70
February	765	46	276	4.97	.30	1.79	1.86
March.....	462	128	244	3.00	.83	1.58	1.82
April.....	263	60	135	1.71	.39	.88	.98
May.....	115	33	61	.75	.21	.40	.46
June.	88	20	41	.57	.13	.27	.50
July.....	85	22	39	.55	.14	.25	.29
August	386	47	188	2.51	.31	1.22	1.41
September.....	243	42	103	1.58	.27	.67	.75
October.....	237	49	113	1.54	.32	.73	.84
The year	765	20	121	4.97	.13	.79	10.65

Miscellaneous Measurements

River	Location	Date	Discharge in Sec.-ft.
Ausable	Arkona .....	..May 14, 1915....	75
“ .....	“ .....	..June 24, 1915....	19
“ .....	“ .....	..July 28, 1915....	41
“ .....	“ .....	..Aug. 18, 1915....	599
“ .....	“ .....	..Oct. 6, 1915....	412
Cedar	Near Manitou Falls .....	..July 15, 1915....	505
Madawaska	Claybank .....	..Sept. 22, 1915....	1,736
“ .....	“ .....	..Oct. 23, 1915....	1,895
Severn	Severn Bridge .....	..Feb. 9, 1915....	656
“ .....	“ .....	..Mar. 9, 1915....	959
“ .....	“ .....	..May 6, 1915....	1,526
Snake Creek	Port Elgin .....	..Aug. 26, 1915....	17
“ .....	“ .....	..Oct. 19, 1915....	20
Sydenham	Florence .....	..Aug. 17, 1915....	478
“ .....	“ .....	..Oct. 7, 1915....	173
Turtle	Otter Falls .....	..Jan. 22, 1915....	221
“ .....	“ .....	..Mar. 1, 1915....	216
Wabigoon	Wainwright Falls .....	..Apr. 21, 1915....	292
“	Sawmill Intake .....	..Apr. 22, 1915....	30
Winnipeg	Whitedog Falls, S. Channel .....	..Mar. 9, 1915....	9,569
“ .....	“ .....	..May 14, 1915....	16,239
“	Whitedog Falls, N. Channel .....	..Mar. 8, 1915....	405
“ .....	“ .....	..May 14, 1915....	731
“ .....	“ .....	..July 10, 1915....	1,389
“ .....	“ .....	..Aug. 11, 1915....	1,377

EASTERN ONTARIO DISTRICT
Summary of Discharge

Summary of discharge in second-foot per square mile for regular river stations in Eastern Ontario District for which such data are available in this report

Station	Drainage Area	1914		1915										Year.
		Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	
Bonnechere River near Eganville.....	670	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.36	.....
Bonnechere River near Golden Lake.....	575	.....	.....	.....	.....	.....	.....	.....	.....	.43	.44	.64	.33	.....
Mississippi River at Ferguson's Falls.....	1,042	.....	.....	.....	.....	.....	.....	.....	.....	.....	.51	.50	.45	.....
Mississippi River at Galetta.....	1,456	.....	.....	.....	.....	.....	.....	.....	.....	.34	.43	.38	.30	.....
Mississippi River near Snow Road.....	446	.....	.....	.....	.....	.....	.....	.....	.....	.....	.70	.74	.67	.....
Tay River near Glen Tay.....	204	.....	.....	.....	.....	.....	.....	.....	.....	.....	.34	.35	.27	.....
York River near Bancroft.....	374	.....	.....	.....	.....	.....	.....	.....	.....	.....	.78	.72	.69	.....

NORTHERN ONTARIO DISTRICT

Summary of Discharge

Summary of discharge in second-foot per square mile for regular river stations in the Northern Ontario District for which such data are available in this report.

Station	Drainage Area	1914		1915										Year.		
		Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.			
Aux Sables River at Massey.....	524	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Blanche River near Englehart.....	430	.50	.31	.33	.32	.60	1.53	2.27	1.27	1.54	.42	.55	1.09	.....	.....	.....
Frederickhouse River at Frederickhouse.....	1,260	.....	.....	.....	.....	.....	.....	.....	.....	.....	.52	.62	2.07	.....	.....	.....
Kabuskong River at Bonfield.....	67	.....	.....	.....	.....	.....	.....	.....	.....	.....	.52	.51	.51	.....	.....	.....
Kagawong River at Kagawong.....	94	.....	.....	.....	.....	.....	.....	.....	.....	.....	.60	.36	.40	.....	.....	.....
Maganetawan River (No. Branch) near Burk's Falls.....	107	.....	.....	.....	.....	.....	.....	.....	.....	.....	.79	.30	1.49	.....	.....	.....
Maganetawan River (So. Branch) near Burk's Falls.....	257	.....	.....	.....	.....	.....	.....	.....	.....	.....	.80	.72	1.21	.....	.....	.....
Muskoka River (North Branch) near Port Sydney.....	560	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Muskoka River (So. Branch) at Tretheway's Falls.....	668	.65	.93	1.02	.91	.89	2.63	1.89	1.84	1.00	.52	.45	1.47	.....	.....	.....
Seguin River near Parry Sound.....	380	.....	.....	.....	.....	.....	.....	.....	.....	.....	.88	.77	.93	1.19	.....	.....
South River near Powassan.....	305	.90	.68	.43	.47	.56	3.35	1.28	.....	.....	.53	.48	1.09	.....	.....	.....
Spanish River at Espanola.....	4,490	.....	.....	.....	.....	.....	.....	.....	.89	.56	.84	.52	1.12	.97	.....	.....
Sturgeon River at Smoky Falls.....	2,250	.....	.....	.....	.....	.....	.....	.....	1.41	.70	.48	.54	1.47	.....	.....	.....
Vermilion River near Whitefish.....	1,580	1.24	.72	.31	.29	.28	1.48	2.27	1.66	1.04	.80	.95	1.23	1.05	.....	.....
Wanapitei River near Wanapitei.....	940	.....	.....	.....	.....	.....	.....	.....	.....	.94	.21	.49	1.38	.....	.....	.....
		.....	.....	.....	.....	.....	.....	.....	.....	.....	.66	.80	.78	.....	.....	.....

NORTH-WESTERN ONTARIO DISTRICT

Summary of Discharge

Summary of discharge in second-feet per square mile for regular river stations in the North-Western Ontario District for which such data are available in this report

Station	Drainage Area	1914		1915											
		Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Year.	
Eagle River at Eagle River.....	970	.37	.33	.31	.36	.27	.29	.59	.68	.73	.49	.34	.31	.42	
English River at Ear Falls.....	11,700	.....	.....	.....	.39	.36	.36	.48	.66	.72	.64	.53	.57	.....
English River at Manitou Falls.....	14,600	.....	.....	.....	.35	.31	.29	.46	.63	.67	.61	.50	.54	.....
English River near Oak Falls.....	15,570	.....	.....	.....	.37	.32	.32	.46	.63	.68	.61	.51	.57	.....
Footprint River at Rainy Lake Falls.....	425	.22	.24	.27	.27	.24	.20	1.03	1.61	1.23	.76	.32	.18	.55	
Manitou River at Devil's Cascades.....	435	.49	.45	.43	.43	.42	.44	.58	.64	.75	.61	.49	.47	.51	
Seine River at Skunk Rapids.....	2,300	.52	.42	.30	.25	.22	.27	.....	.....	.....	.....	.....	.....	.....
Turtle River at Mountain Rapids.....	1,760	.59	.23	.10	.11	.12	.29	.75	1.16	1.34	.79	.37	.40	.52	
Wabigoon River near Quibell.....	2,400	.36	.28	.29	.29	.27	.54	.91	.81	.66	.36	.34	.42	.46	
Wabigoon River at Wabigoon Falls.....	3,120	.36	.28	.28	.26	.23	.55	.82	.78	.67	.36	.33	.45	.45	

SOUTH-WESTERN ONTARIO DISTRICT

Summary of Discharge

Summary of discharge in second-feet per square mile for regular river stations in South-Western Ontario District for which such data are available in this report.

Station	Drainage Area	1914		1915											
		Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Year.	
Beaver River near Feversham	37	.43	.59	.46	.54	.62	1.54	.81	.65	.43	.38	.52	.58	.....
Beaver River near Kimberley	100	.....	.....	.....	.....	.....	1.20	1.76	.29	.60	.44	.43	.57	.....
Bighead River at Meaford	132	.....	.....	.....	.....	.....	.....	.....	.....	.33	.39	.27	.81	.....
Black River near Washago	585	.....	.....	.....	.....	.....	.....	.....	.92	.31	.25	.71	.55	.....
Credit River at Cataract Junction	85	.....	.....	.....	.....	.....	.....	.....	.33	.35	.62	.87	1.04	1.10
Maitland River at Ben Miller	950	.59	.89	1.29	3.40	1.79	1.46	.31	.16	.14	.87	1.41	1.04	1.10	
Mill Creek near Redwing	49	.....	.....	.....	.....	.....	.....	.....	.....	.....	.22	.51	.69	.....
Nottawasaga River near Nicolston	416	.61	.49	.47	.72	1.91	1.55	.53	.26	.37	.64	.56	.58	.72	
Rocky Saugeen River near Markdale	96	.....	.....	.....	.....	.....	.....	.....	.....	.64	.60	.72	.76	.....
Saugeen River near Port Elgin	1,565	.74	.63	.76	1.85	1.71	1.66	.52	.39	.33	.47	.73	.83	.88	
Saugeen River near Walkerton	895	.66	.73	.63	1.19	1.39	1.65	.58	.36	.31	.49	.73	.86	.80	
Sydenham River near Owen Sound	71	.....	.....	.....	.....	.....	.....	.....	.....	.32	.39	.42	.58	.....
Thames River (Main Stream) near Byron	1,270	.46	.59	1.18	2.63	1.33	1.09	.38	.29	.46	1.17	.69	.76	.91	
Thames River (South Branch) near Ealing	515	.....	.....	.....	.....	.....	.....	.....	.24	.39	1.12	.84	.80	.....
Thames River (North Branch) near Fanshaw	650	.....	.....	.....	.....	.....	.....	.....	.12	.20	.94	.37	.48	.....

SOUTH-WESTERN ONTARIO DISTRICT GRAND RIVER BASIN

Summary of Discharge

Summary of discharge in second-feet per square mile for regular river stations on Grand River and tributaries for which such data are available in this report

Station	Drainage Area	1914		1915											
		Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Year	
Grand River at Belwood	280	.27	.46	.28	.64	3.35	2.32	.27	.08	.13	1.00	1.40	.80	.92	
Grand River near Conestogo.....	550	.28	.39	.18	.77	2.62	2.11	.30	.19	.18	1.39	1.53	.90	.91	
Grand River at Galt.....	1,360	.30	.34	.25	.57	1.60	1.63	.32	.20	.26	1.00	1.28	.72	.70	
Grand River at Glen Morris	1,390	.40	.35	.30	.60	.....	1.66	.38	.27	.30	1.39	1.42	.73	.....
Grand River at Brantford.....	2,000	.31	.42	.33	.84	1.95	1.71	.44	.36	.34	1.18	1.10	.75	.81	
Grand River at York.....	2,280	.34	.43	.35	.85	1.67	1.78	.37	.24	.24	1.18	1.03	.73	.76	
Irvine River near Salem	67	.27	.26	.45	1.34	2.82	2.63	.34	.13	.40	3.57	2.88	1.28	1.36	
Conestogo River at St. Jacob's.....	305	.29	.31	.18	1.90	4.71	2.32	.21	.06	.18	1.16	1.80	.75	1.14	
Speed River at Caraher's Bridge, near Guelph.....	77	.77	.48	.39	.91	1.78	1.71	.47	.35	.51	1.79	1.57	.87	.96	
Speed River at Hespeler.....	250	.32	.31	.24	.51	1.14	1.20	.48	.42	.55	1.47	1.70	.88	.77	
Galt Creek at Galt	45	.64	.84	.64	.98	1.56	.84	.44	.30	.53	1.29	.71	.67	.80	
Ninth River near Canning.....	365	.67	.75	.50	1.66	3.18	1.66	.41	.30	.33	1.54	.79	.74	1.04	
Whiteman's Creek near Burford.....	154	.49	.60	.61	1.79	1.58	.88	.40	.27	.25	1.22	.67	.73	.79	
Fairchild's Creek near Onondaga	115	.23	.27	.18	2.08	1.97	.50	.19	.09	.10	.70	.45	.62	.61	
Boston Creek near York	125	.21	.36	.51	2.05	1.72	1.64	.32	.12	.18	.62	.18	.21	.66	

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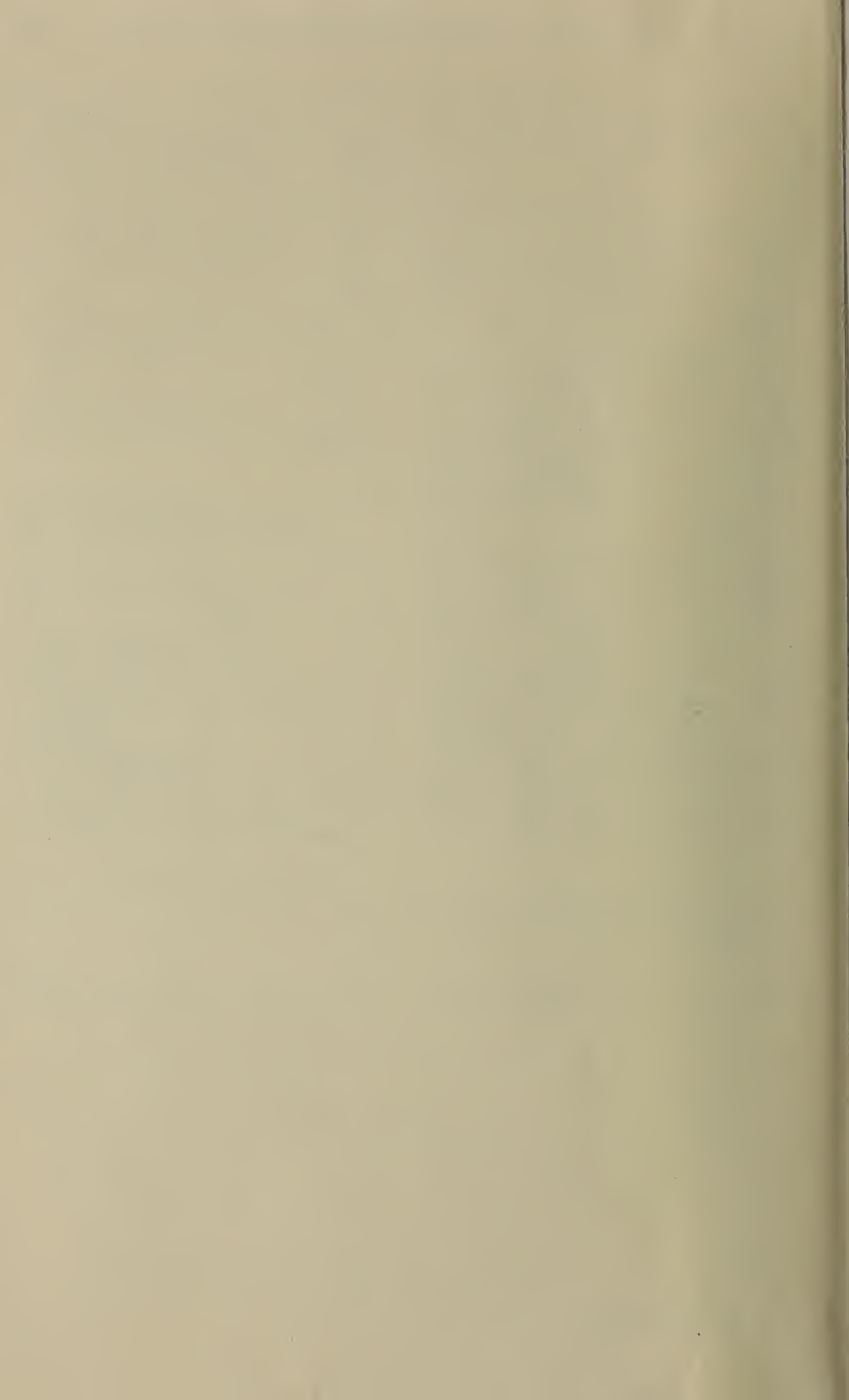
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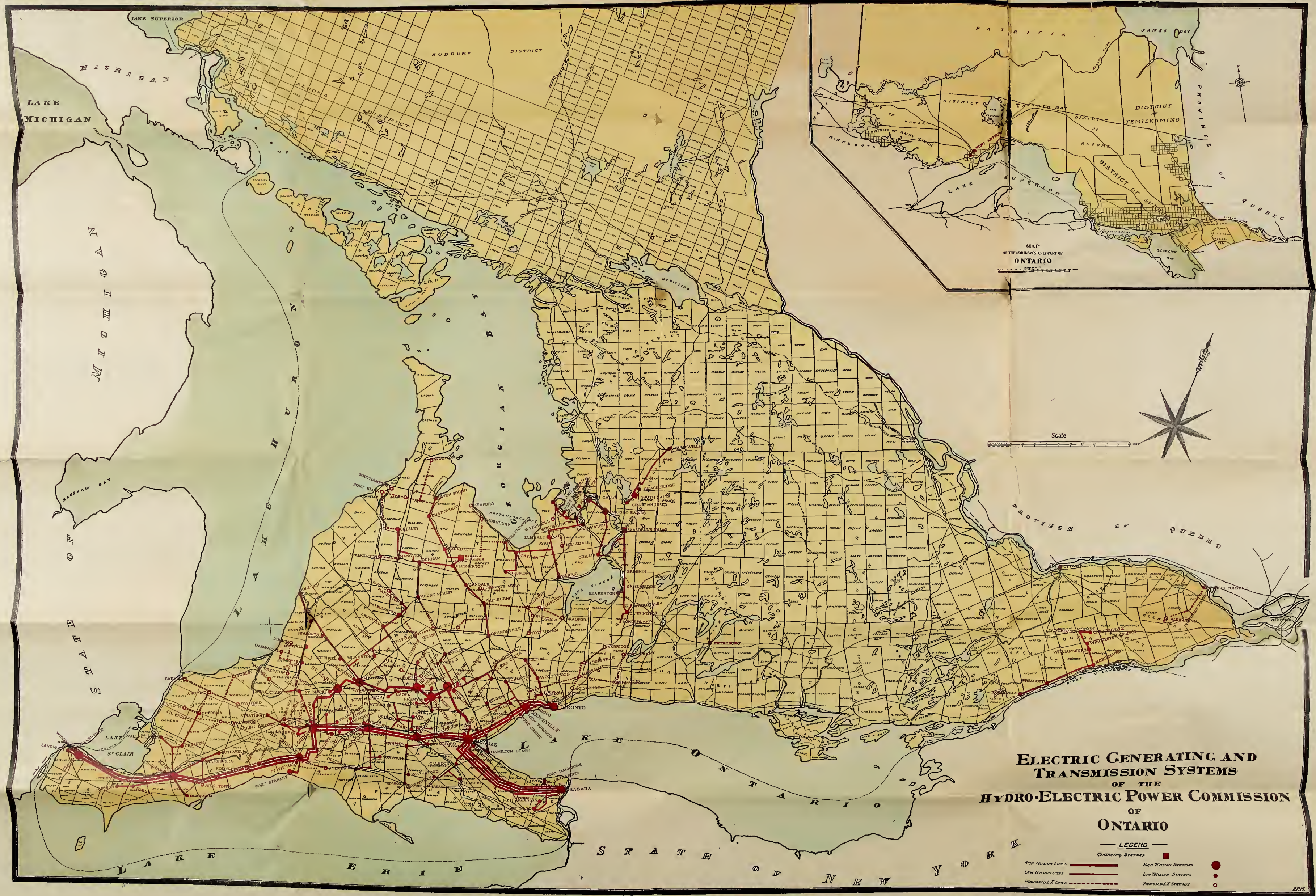
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**ELECTRIC GENERATING AND
TRANSMISSION SYSTEMS
OF THE
HYDRO-ELECTRIC POWER COMMISSION
OF
ONTARIO**

- LEGEND**
- | | | | | | | |
|--------------------|-------------------|---------------------|---------------------|-----------------------|----------------------|------------------------|
| High Tension Lines | Low Tension Lines | Proposed L.T. Lines | Generating Stations | High Tension Stations | Low Tension Stations | Proposed L.T. Stations |
| — | — | --- | ■ | ● | ○ | ○ |

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